

## **Chapter 3 – AFFECTED ENVIRONMENT and ENVIRONMENTAL CONSEQUENCES**

### **3.1 INTRODUCTION**

The purpose of **Chapter 3** is to describe the physical, biological, and human components of the environment that would be affected by the proposed expansion of 49 Degrees North Mountain Resort (49 Degrees North). The analysis area, evaluation methods and existing conditions are described for each affected resource. The environmental consequences of each alternative are then evaluated.

Effects of the Action Alternatives are characterized as direct, indirect, or cumulative. Direct and indirect effects result from the Action Alternatives (Alternatives B and C). Cumulative effects are those effects that result from incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agencies (Federal or non-Federal) or persons are undertaking other such actions.

**Chapter 3** also includes sections discussing other disclosures, including:

- Adverse environmental impacts that cannot be avoided,
- Short-term use and long-term productivity,
- Irreversible and irretrievable commitments of resources, and
- Other specifically required disclosures.

### **3.2 PHYSICAL ENVIRONMENT**

#### **3.2.1 Soil and Geologic Resources: Affected Environment**

##### **3.2.1.1 Regulatory Framework**

The Colville Forest Plan (USDA Forest Service 1988a) provides general guidance for land management activities across the entire forest and specific guidance within individual management areas. Specific soil and water resource guidelines for MA 3C of the Forest Plan are: *“When locating recreational improvements, mitigate impacts to streams, lakes, aquatic ecosystems and associated riparian areas.”* Additional soil quality standards have been identified for the Colville National Forest (CNF) but do not apply to developed recreation sites.

##### **3.2.1.2 Methods**

Soil resources in the analysis area were assessed through site visits, consultation with Forest Service specialists, unpublished file information, reviews of information for previous 49 Degrees North expansion projects, and review of NEPA documents for other projects on the Colville National Forest. The Stevens County Soil Survey (USDA SCS 1982) was compared with field observations to identify current conditions, evaluate potential soil impacts and evaluate the effectiveness of potential BMPs.

### **3.2.1.3 Area of Analysis**

The area of analysis for direct, indirect and cumulative impacts is MA 3C and the adjacent private lands in Section 7. Also included is the proposed Nordic trail in the NW¼ of Section 6 and the SE¼ of Section 36, both adjacent to MA 3C.

### **3.2.1.4 Existing Conditions**

#### **Geology**

The analysis area is dominated by Precambrian bedrock, mainly quartzite and argillite. The entire analysis area has been scoured by continental glaciation leaving a dominance of moderately-deep to deep, mixed glacial drift and bedrock soils. There are areas of shallow soils and bedrock outcrops near ridges and convex sites. Deep soils formed in glacial drift and stream deposits from mixed rock sources occur along perennial streams at the lowest elevations. All soils in the analysis area have a surface layer of volcanic ash, mainly from the eruption of Cascade Range volcanoes.

#### **Mineral Potential**

Mineral potential in the analysis area appears low and no evidence of past mining activity has been identified.

#### **Avalanche Hazard**

Avalanche hazard is low at 49 Degrees North due to the absence of unforested slopes, cliffs, very steep slopes, cornices, or other landscape features that increase avalanche danger. Avalanche hazards on ski runs are managed with modern control methods through routine operating procedure thus eliminating risks on the ski area.

#### **Landslides, Slumps, Earthflows**

No features suggesting unstable landscape features are present in the analysis area including those areas affected by existing ski runs. The bedrock types and geologic materials present are generally very stable. No soils with high clay content are present.

#### **Soil**

Soil characteristics in the analysis area are closely related to the bedrock geology (quartzite and argillite). Weathering, erosion, glaciation and stream activity have modified these rock materials into the current soils. Volcanic ash-influenced loess, mainly from the eruption of Cascade Range volcanoes, forms the surface soil over most of the analysis area. This ash-influenced layer is mainly 12-24 inches thick. It is thicker on north and east aspects and thinner on south and west aspects.

Soils on the upper elevation slopes are formed mainly in weathered bedrock that has moved downhill due to gravity (colluvium) or has remained in place (residuum). Small areas of glacial drift are present. The surface soil is volcanic ash-influenced silt loam. Subsoils include silt loams, loams and sandy loams with high rock contents. Soil depth is mostly deep with shallow to moderately-deep soils near rock outcrops and ridges.

Soils at the lower elevations are formed in a mixture of alluvium and glacial deposits, especially glacial till and drift. Soil depth is usually very deep. The surface soil is dominated by volcanic ash-influenced silt loam. This ash-influenced layer has a high moisture and nutrient retention

capacity and is extremely fertile. Subsoils are silt loam, loam and sandy loam with high rock contents.

Soil resources in the proposed expansion area were mapped by the USDA Soil Conservation Service (1982). These maps were found to be reasonably accurate for the purpose of evaluating potential impacts related to this project (Dutton 2000). **Table 3-1** lists the soil mapping units within MA 3C. Action Alternatives would affect each of these soil types except the Kegel loam since no activities are planned in the area along Tenmile Creek where it occurs.

**Table 3-1: Soil Mapping Units in the Analysis Area**

<b>Soil Mapping Unit Number and Name</b>	<b>Location</b>
94 – Hartill silt loam, 40 to 60% slopes	Lower slopes of Nelson Creek drainage
106 – Huckleberry silt loam, 40 to 60% slopes	Most of ski area on Chewelah Peak and Cottonwood Divide
115 – Kegel loam	Low terraces along Tenmile Creek between Nelson and Little Calispell Creek
137 – Manley silt loam, 0 to 20% slopes	Confluence of Tenmile and Nelson Creeks
138 – Manley silt loam, 20 to 40% slopes	Base area and lower ski area
238 – Vassar silt loam, 30 to 65% slopes	Tenmile Creek and north to the Learning Center

Soils in the proposed expansion area are covered with a surface layer of partially-decomposed organic matter including conifer needles and other plant parts. This layer protects the surface from raindrop impact and surface flow erosion. Most soil erosion occurs when the surface layer is removed by fire, grading or other activity.

Most surface soils are dominated by volcanic ash-influenced silt loam. This ash-influenced layer has a very high moisture and nutrient retention capacity and is extremely fertile. These highly fertile soils, combined with the abundant precipitation, results in rapid revegetation following disturbance (Glines 2002). Rapid revegetation reduces the period of exposure to erosion and the potential for sediment to reach streams.

Erosion and sediment delivery potentials for these soils are moderate to high due to the dominance of silt loam surface textures and steep slopes. Erosion concerns are greatest where vegetation is completely removed such as at culvert installations and grading areas. Short-term erosion may occur on these disturbed surfaces until they are revegetated, but effective BMPs are available to reduce or eliminate these impacts.

The existing ski runs at 49 Degrees North have developed sufficient vegetation cover to prevent observable soil erosion (Dutton 2000). Plants are a mixture of native species that re-established following the original run construction and introduced species including seeded grasses and small amounts of invasive weeds. Minor rill erosion has occurred on the steepest sections of some runs in the past but these sites now appear vegetated and stable.

## **3.2.2 Soil and Geologic Resources: Environmental Consequences**

### **3.2.2.1 Alternative A – The No Action Alternative**

The No Action Alternative would not change existing conditions. Current soil conditions would continue with no change in soil and geologic resources in the analysis area.

### 3.2.2.2 Effects Common To Action Alternatives

Both Action Alternatives include activities that may affect soil resources by removing vegetation and exposing soil to erosion. Mitigation activities to reduce these effects concentrate on rapid revegetation combined other methods to stabilize soil, divert runoff, and prevent sediment from reaching streams. Activities that may affect soil resources include:

- Clearing vegetation for ski runs and ski lifts,
- Grading of ski runs,
- Grading for parking lots, ice rink, buildings, utilities and water/sewer systems,
- Construction of Nordic trails, and
- Culvert installations for stream crossings.

Removal of trees and large shrubs would occur on alpine runs and Nordic trails (see discussion below for each alternative). Soils would be exposed to erosion for a short period during tree harvest and slash disposal. These activities remove the soil litter layer from a portion of the area and may result in limited erosion, compaction, or displacement of the soil surface. No areas of long, continuous mineral soil exposure would result from tree clearing and the associated thinning and slash disposal.

Limited soil disturbance may also occur where tree stumps require removal. Clearing specifications would be written to cut trees as low to the ground as possible to eliminate the hazard of stumps. Where stumps are not cut low enough, they would be treated either by re-cutting, by breaking down with harvest equipment, or by removal by harvest equipment. Stump removal disturbances would occur at small, disconnected sites and are not expected to cause measurable soil erosion. Best Management Practices (BMPs) are identified in **Chapter 2** that would be used to minimize impacts to soil resources, especially soil erosion. BMPs have proven to be effective at minimizing soil erosion on tree removal sites (Idaho DEQ 2001, Montana DNRC 1998, Rosquist 2002) and would be monitored to ensure their application and effectiveness.

Each of the Action Alternatives would regrade and revegetate approximately 100 acres of the proposed cleared ski runs to improve skiing quality and safety (**Figures 2-1 and 2-2**). Soil productivity may be reduced temporarily on these sites due to soil manipulation but should return to pre-disturbance conditions over time.

Grading and soil disturbance would also occur at construction sites for the Main Lodge, Nordic Center, ice rink, parking lots, sewage treatment facility, power lines, and water pipelines totaling approximately 11 acres. Soil productivity would be permanently affected on areas covered by permanent facilities. Soil would also be temporarily exposed to erosion during installation of underground water and electric lines. Soil erosion may occur during these activities especially if large precipitation events occur before construction and revegetation is complete.

Soil erosion may also occur during construction of Nordic trails. Nordic trails constructed on steep slopes would require cut and fill construction similar to roads. This would expose soil to erosion during construction and revegetation. Long term soil erosion from these Nordic trails should be minimal since they would be completely revegetated except for the summer maintenance vehicle tracks and tracks from horses, mountain bikes, and hikers. Cross-country trails would be closed to motorized vehicles (except for maintenance) and receive much less summer use than a typical road. Road and trail construction BMPs identified in **Chapter 2 – Mitigation**, would be applied to Nordic trail construction where appropriate.

BMPs have been identified from both Forest Service and State of Washington sources that have proven to be effective at minimizing erosion. An additional review of erosion control methods would occur at the application stage for an NPDES storm water discharge permit. The State of Washington would be responsible for identifying State BMPs for implementation and for monitoring their effectiveness (Washington State Department of Ecology 2001).

Action Alternatives include installing and replacing culverts. Alternative B would install 13 culverts and Alternative C would install 10 culverts. Each Action Alternative would replace 3 existing culverts. Most of these culverts are for stream crossings along the proposed Nordic trails. Short-term soil erosion and sediment delivery to streams would be expected related to culvert installations and replacements. BMPs have been developed that minimize soil erosion and sedimentation for these projects and would be implemented (**Chapter 2 - Mitigation**). Further review for final culvert design would be completed during issuance of a Washington Department of Fisheries Hydraulic Permit as part of the Joint Aquatic Resource Permit Application (JARPA) permitting process (**Chapter 2 - Permits**).

### 3.2.2.3 Effects of Alternatives B and C

Alternative B would clear 310 acres for alpine ski runs and lifts and 53 acres for Nordic trails. Alternative B would install 13 new culverts and replace 3 existing culverts (**Figure 2-1**). Of the 310 acres cleared for ski runs, approximately 100 acres would be graded for ski run construction. An additional 11 acres would be affected by new buildings, parking lots, ice rink, wastewater treatment facility, power lines, and pipelines. Alternative B includes approximately 1 mile of Nordic trail climbing a steep ridge in Section 8 (**Figure 3-1**). To prevent significant erosion problems along this section of trail, extra effort in BMP application would be required.

Alternative C would clear approximately 230 acres for alpine ski runs and lifts and 35 acres for Nordic trails. Alternative C would install 10 new culverts and replace 3 existing culverts (**Figure 2-1**). Like Alternative B, approximately 100 acres would be graded for ski run construction and another 11 acres would be graded for constructing buildings, parking lots, the ice rink, wastewater treatment facility, power lines, and pipelines.

### 3.2.2.4 Cumulative Effects

Other projects that have the potential to affect soil resources in the analysis area in the future and are in progress or planning stages include:

- Flowery Trail Road reconstruction,
- Chewelah Peak Learning Center,
- Additional homes on Flowery Trail Community subdivision leased lands, and
- New homes or commercial development on private lands in Section 7.

Environmental analyses for the Flowery Trail Road reconstruction and the Chewelah Peak Learning Center did not identify potential environmental effects on soil resources beyond short-term construction activities that would be mitigated using BMPs (Washington State Department of Transportation 1996, Wyatt Engineering 2001). **Table 3-2** illustrates the differences in potential impacts to soil resources by alternative.

***Figure 3-1: Alternative B with Stream Buffers***

***Figure 3-2: Alternative C with stream buffers***

**Table 3-2: Comparison of Alternatives – Soil Resources**

Issue	Alternative A - No Action	Alternative B	Alternative C
Limited soil erosion, displacement or compaction in areas cleared for ski runs and ski lifts	No change	310 acres	230 acres
Short-term erosion at grading sites for alpine runs	No change	100 acres	100 acres
Short-term erosion related to Nordic trail construction	No change	10 miles of trail	7 miles of trail
Short-term erosion at culvert installations	No change	13 new culverts and 3 culvert replacements	10 new culverts and 3 culvert replacements
Short-term erosion at other construction sites (parking lot, lodges, ice rink, pipelines, powerlines, Nordic Center, wastewater treatment areas)	No change	11 acres	11 acres

The cumulative effects of these two projects in combination with the proposed 49 Degrees North Action Alternatives are unlikely to have a detectable effect on soil resources. Potential impacts from additional homes at the Flowery Trail Community subdivision would be distributed over the next 10-20 years and regulated by planning and health authorities. New homes or commercial development on private lands in Section 7 would also be reviewed by planning and health authorities. Any soil disturbing construction activities over 1 acre would require an NPDES storm water permit including BMP implementation.

### 3.2.2.5 Conclusions

Short-term soil erosion would occur due to 230-310 acres of clearing for ski runs under Alternative C and B respectively. Short-term erosion due to culvert installations and replacements would occur at 13-16 sites under Alternative C and B respectively. Short-term effects on soil erosion and productivity would occur on 100 acres of grading for ski run construction. Long-term effects on soil productivity would occur on 11 acres due to construction of permanent features such as lodges, parking lots, ice rink, wastewater treatment facility, power lines, and pipelines.

Forest Plan guidelines for locating recreational improvements would be met since the proposed actions would “*mitigate impacts to streams, lakes, aquatic ecosystems and associated riparian areas.*”

## 3.2.3 Water Resources: Affected Environment

### 3.2.3.1 Regulatory Framework

#### Water Quality Standards and Water Quality Limited Listings

Waters within the analysis area must comply with Washington State water quality standards and the Memorandum of Agreement between the Forest Service (Region 6) and the State of Washington (Department of Ecology). All surface waters lying within national parks, national forests, and/or wilderness areas are classified AA. Water quality standards for AA waters are listed below in **Table 3-3**.

Section 303(d) of the Clean Water Act requires identification of streams and stream segments that do not meet current water quality standards. No streams within the analysis areas for direct, indirect or cumulative impacts are listed as exceeding standards at this time.



**Table 3-3: Water Quality Parameters**

Parameter	AA Waters	Tenmile Creek Data
Bacteria (coliforms)	<50 organisms/100 ml	No data
Dissolved O <sub>2</sub>	>9.5 mg/L	11-14 mg/L
Temperature	<16° C	3-11° C
pH	6.5-8.5	6.6-7.5
Turbidity	<5 NTU over background	0.2-9.5 NTU
Toxic Substances	See WAC 173-201A-240	No data

Source: USDA Forest Service 1976

### Colville National Forest Plan

The Colville Forest Plan (USDA Forest Service 1988a) provides general guidance for land management activities across the entire forest and specific guidance within individual management areas. General water resource goals for the Colville National Forest are: *“Comply with State requirements in accordance with the Clean Water Act for protection of waters of the State of Washington through planning, application and monitoring of Best Management Practices (BMPs) in conformance with the Clean Water Act, regulations and federal guidance issued thereto.”* Specific water resource guidelines for MA 3C are: *“When locating recreational improvements, mitigate impacts to streams, lakes, aquatic ecosystems and associated riparian areas.”*

### Inland Native Fish Strategy (INFISH)

The Inland Native Fish Strategy (36 CFR 219.10) amended the Forest Plan in August of 1995 and contains additional standards and guidelines to protect the aquatic environment. INFISH sets the criteria for delineating Riparian Habitat Conservation Areas (RHCAs). INFISH requirements are addressed in detail in **Section 3.3.1 - Fisheries Resources**.

#### 3.2.3.2 Methods

Water resources in the analysis area were assessed through site visits, consultation with Forest Service specialists, unpublished file information, reviews of information for previous 49 Degrees North expansion projects, and review of NEPA documents for other projects on the Colville National Forest. Potential effects to water yield were evaluated using the Equivalent Clearcut Area (ECA) method (USDA Forest Service 1973).

#### 3.2.3.3 Area of Analysis

The area of analysis for direct and indirect effects is MA 3C and the adjacent private lands in Section 7. Also included is the proposed Nordic trail in the NW¼ of Section 6 and the SE¼ of Section 36, both adjacent to MA 3C. The area of cumulative effects includes the entire Tenmile Creek watershed. This watershed is approximately 7,275 acres and includes all tributaries to Tenmile Creek, including Little Calispell Creek, Nelson Creek and their tributaries.

#### 3.2.3.4 Existing Conditions

##### Watershed Characteristics

The proposed action would occur in the upper portion of the Tenmile Creek watershed. Tenmile Creek flows southeast for approximately 4 miles into Calispell Creek, which flows east for approximately 7 miles into a small reservoir at Power Lake. From Power Lake Calispell Creek flows northeast for about 2 miles into Calispell Lake, and from Calispell Lake it flows northeast

for another 6 miles into the Pend Oreille River at the town of Cusick. Past activities that may impact the watershed include timber harvest, road construction, natural and prescribed fire, homesites and 49 Degrees North.

The Tenmile Creek watershed has steep gradient streams with narrow floodplains and riparian areas. Tenmile, Little Calispell and Nelson Creeks are perennial while most other tributaries of Tenmile Creek are intermittent.

Streams in the analysis area have a snow-dominated runoff regime fed by a snowpack that remains throughout the winter. Spring runoff is the main flow event of the year. Mid-winter rain-on-snow events are rare but can cause damage from peak flows. Rain-on-snow events or warm air events are more common in the late spring than other times of the year, but are confined to the higher elevations; peak flows are localized and usually do not exceed bankfull flow (USDA Forest Service 2002b).

Stream categories<sup>1</sup> for the area of direct and indirect effects are illustrated in **Figure 3-1**, along with their associated buffers (Riparian Habitat Conservation Areas). Category 1 streams include Tenmile Creek, Little Calispell Creek below the resort base area and the lower portion of Nelson Creek. Category 2 streams include the two unnamed tributaries of Tenmile Creek that originate in Section 6. All other stream segments are either Category 4 or 2 due to their intermittent character or lack of fish respectively. No Category 3 waterbodies are present in the area of direct and indirect effects.

### **Streamflow**

Streamflow is the water produced from a drainage that makes it into a stream channel. Water yield equals drainage input (precipitation) minus losses (evapotranspiration) plus or minus storage (depressions, impoundments, diversions). Removal of forest vegetation can increase water yield because of a reduction in transpiration rates, an increase in wind turbulence (which results in redistribution of snow and greater local snow accumulation), a reduction of snow interception losses, and a more efficient conversion of the snowpack to streamflow. Clearing for ski runs and lifts can increase streamflow due to a reduction of transpiration and other factors.

The Equivalent Clearcut Area (ECA) model provides a snapshot in time of the amount of the area in a watershed that exists in an open condition (treeless). ECA can be used to estimate a change in water yield from a basin that may be expected from various activities. These activities include timber harvest, thinning and others associated with ski area development. The ECA method evaluates the likelihood of any increase in the average duration of near bankfull (channel-forming) flows, and the potential for increases in high magnitude peak flows due to rapid snowmelt. Past treatments such as timber harvest and road construction, when expressed as a percentage of the total watershed, provide a baseline against which proposed management activities can be compared. Increases in water yield can be correlated with increases in peak discharge. For the purpose of this analysis, a water yield increase exceeding 10% suggests that more intensive field investigations and evaluations may be required. An ECA analysis for existing conditions in the Tenmile Creek watershed considered activities over the past 30 years and determined that current conditions have increased water yield by 4%

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<sup>1</sup> Categories are described in the Inland Native Fish Strategy. Category 1 are perennial fish-bearing streams. Category 2 are perennial streams that do not have fish. Category 3 are intermittent fish-bearing streams. Category 4 are intermittent streams that do not have fish. The project area has no Category 3 streams.

(Callahan 2002). This increased water yield results from past timber harvest, road construction and other projects.

Streamflow may also be affected by withdrawals for domestic water and snowmaking. Current stream withdrawals are limited by water rights (112 gallons per minute (GPM) from Little Calispell Creek and 76 GPM from Tenmile Creek). Both domestic use and snowmaking are limited by the existing storage tank capacity of 10,000 gallons. The third water source is an existing well on private land in Section 7, which likely has little or no effect on streamflows. A small amount of domestic water use is removed from the basin by skiers who consume water at the ski area and use wastewater facilities elsewhere. A small amount of snowmaking water is lost by evaporation, but most is returned to the ground/surface water system within the basin following snowmelt.

### **Water Quality**

Water quality in the analysis area is generally good. No impaired stream segments were identified in the 1998 Washington State Water Quality Assessment, Section 303(d) (Wasson 2002). Water quality criteria are listed on **Table 3-3**. Data collected on Tenmile Creek meets State Standards for dissolved oxygen, temperature, and pH.

Washington State does not have standards for sediment. Turbidity is somewhat related to sediment and refers to the amount of light that is scattered or absorbed by a fluid; hence, turbidity is an optical property of the fluid. Turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10% increase in turbidity when the background turbidity is more than 50 NTU.

Coliform bacteria have not been noted as elevated in past sampling (Wasson 2002). Potential sources of coliform include the resort sewage disposal system, the Flowery Trail Community subdivision sewage disposal systems and livestock grazing. State review of the resort sewage system and installation of new home systems is designed to prevent coliform and nutrient contamination from these sources. The small number of livestock (87 animal unit months) grazed in the 37,000-acre grazing allotment containing the resort are also unlikely to impact coliform and nutrient levels. These livestock have limited access to riparian areas, which limits the potential for impacts to water quality.

Stream segments within the analysis area have not been tested for presence of other chemicals such as petrochemical residues from melting snow. It is not presently known whether these streams are within the current state water quality standards for these substances.

Other existing water quality concerns related to the ski area include:

- Petrochemicals from parking areas and from the maintenance shop area transported in runoff to Little Calispell Creek,
- Petrochemicals and salts in snow plowed from parking areas and deposited near streams.
- The potential for a catastrophic spill from the fuel station located in the maintenance area adjacent to the Little Calispell Creek.
- Chlorine from the chlorinator located adjacent to Little Calispell Creek and the potential for a catastrophic spill.
- Deicers from the Main Lodge area.
- Sanding materials, including salt applied to roadways for traction.

## Water Supply

Domestic water is currently supplied from a surface water diversion on Little Calispell Creek. Water is piped to a 10,000-gallon storage tank. Water is treated by chlorination for potable uses in the Main Lodge. This same water system also serves the Flowery Trail Community subdivision. Untreated water is used for limited snowmaking on approximately 36 acres. Most of the water used in snowmaking remains in the watershed and contributes to surface and groundwater following snowmelt. The ski area also owns a well in the northeast corner of Section 7 with a flow rate of 35 GPM (gallons per minute). This well is not currently connected to the ski area water system.

## Wastewater Disposal

Wastewater treatment is provided by a clay-lined, evaporation-type sewage lagoon with a capacity of 475,000 gallons. The existing lagoon system has functioned adequately for the historic use but is not sufficient to meet the needs of the Action Alternatives (Eminger 2002c, Johnson 2002). The capacity of the existing system is approximately 2,000 visitors per day (**Table 2-4**). Concerns have been raised over the level of treatment provided by the existing system and the potential for contamination of groundwater and surface water (Wasson 2002). The ski area owner and wastewater consulting engineer are currently in negotiation with the Washington Department of Ecology concerning the final design of a replacement system. This design would require approval and oversight by the Department of Ecology.

## Water Rights

Current water rights are for 112 gallons per minute (GPM) from Little Calispell Creek, 76 GPM from Tenmile Creek and 150 GPM from a well on private land in Section 7 (**Table 3-4**). These flows are sufficient to support the proposed expansion. Snowmaking would continue to be limited by storage capacity.

**Table 3-4: Summary of Existing Water Rights**

Water Source	Water Right Number	Flow Rate (gal/min)
Little Calispell Creek	S3-21214C	112.2
Tenmile Creek	S3-27231	76.3
Well	G3-29842	150.0

## Wetlands

Jurisdiction wetlands are regulated by the US Army Corps of Engineers under Section 404 of the Clean Water Act. Wetlands under Clean Water Act jurisdiction must have wetland hydrology, wetland vegetation and wetland soils (US Army Corps 1987). Only very small areas of jurisdictional wetland are present in the analysis area. These occur as very narrow and intermittent zones usually no more than a few feet wide immediately adjacent to perennial streams. Most stream banks in the analysis area do not qualify as wetlands but are still regulated up to the average high water mark under Section 404. The closest large area (>1 acre) of jurisdictional wetland occurs along Tenmile Creek in the northeast corner of Section 6, north of the Flowery Trail Road. No activity is planned in this part of Section 6 under any alternative.

## Riparian Areas and Riparian Habitat Conservation Areas (RHCAs)

Most perennial and intermittent stream sections in the analysis area have narrow riparian zones dominated by vegetation reflecting more moist conditions than the surrounding uplands.

Riparian areas at 49 Degrees North are often dominated by western hemlock, western red cedar, Engelmann spruce, grand fir, subalpine fir, alder, willow, and dogwood.

The Inland Native Fish Strategy (INFISH) amended the Forest Plan in August 1995 and contains standards and guidelines to protect the aquatic environment including water quality (USDA Forest Service 1995). INFISH identifies criteria for delineating RHCAs or stream buffers. These RHCAs vary in width according to the size and aquatic values of each stream segment. In general, perennial fish-bearing streams (Category 1) have a 300-foot RHCA on each side of the stream; perennial non fish-bearing streams (Category 2) have a 150-foot RHCA on each side of the stream; non fish-bearing, intermittent streams (Category 4) have a 50-foot buffer on each side of the stream.

RHCAs within the analysis area are illustrated in **Figures 3-1** and **3-2**. **Table 3-5** lists RHCA impacts for the current ski area and the Action Alternatives. Current RHCA impacts existed before adoption of INFISH; however, INFISH requires elimination or mitigation for existing impacts where possible. The existing base area development including the Main Lodge, maintenance area and Main Lodge parking area covers 3.4 acres within the Little Calispell Creek RHCA (**Figure 1-3**). The existing parking lots on either side of Little Calispell Creek cover 2.7 acres within the RHCA. Existing ski runs within RHCAs cover approximately 7 acres (**Table 3-5**). The total RHCA impact under the existing conditions is about 13 acres. These activities within RHCAs have the following potential impacts and risks:

- Increased runoff and sediment from 13 acres of cleared vegetation,
- Sediment due to foot/equipment traffic on or near creek banks,
- Runoff from parking lots containing petrochemicals,
- Potential small or large fuel spills from fuel station,
- Potential runoff from the maintenance area containing petrochemicals,
- Snow storage areas that contribute runoff,
- Potential small or large chlorine spills from the water chlorinator,
- Runoff from Main Lodge area containing deicers.

**Table 3-5: Comparison of Riparian Habitat Conservation Area Impacts**

SITES	RHCA CATEGORY	ALT. A	ALT. B	ALT. C
<b>Impacts to RHCAs (acres)</b>				
Base Area Development	Category 1 = 3.4 ac	3.4	3.4	3.4
Parking Areas	Category 1 = 2.7 ac	2.7	2.7	2.7
Ski Runs and Trails – graded areas	Category 1 = 1.6 ac (Alt B & C) Category 2 = 0.2 ac (Alt B & C) Category 4 = 0.4 ac for Alt B, 0.3 ac for Alt C	0	2.2	2.1
Ski Runs and Trails– cleared (not graded)	Category 1 = 0.25 ac (Alt B & C) Category 2 = 0.30 ac (Alt B & C) Category 4 = 0.5 ac for Alt B, 0.4 ac for Alt C	7.0	8.1	8.0
<b>Total RHCA Impacts</b>		<b>13.1</b>	<b>16.4</b>	<b>16.2</b>
<b>Reclamation in RHCAs</b>				
Little Calispell Creek Reclamation	Category 1 = 2.0 ac (Alt C)	0.0	0.0	2.0
<b>Net RHCA Impacts</b>		<b>13.1</b>	<b>16.4</b>	<b>14.2</b>

## **3.2.4 Water Resources: Environmental Consequences**

### **3.2.4.1 Direct and Indirect Effects**

Each water resource topic is discussed individually in relation to all three alternatives, including the No Action Alternative. These water resource topics include streamflow, water quality, water supply, wastewater disposal, wetlands and riparian areas (RHCAs).

#### **Streamflow**

##### **Alternative A**

Under Alternative A, the No Action Alternative, existing streamflow conditions would continue.

##### **Alternatives B and C**

Under both Action Alternatives, water yield changes from clearing within the area of direct, indirect, and cumulative effects are estimated to be too small for detection. The small acreage to be cleared for ski runs and other project features (230 acres for Alternative C and 310 acres for Alternative B) is mainly on north aspects where clearing has less effect on water yield. The potential for stream flow change was modeled using the ECA method (USDA Forest Service 1973). Including the existing condition, the potential increase in water yield was predicted as 5.6 - 5.7% depending on the alternative. These predicted increases are well below the 10% level of concern. Alternative B has a larger acreage of clearing (310 acres) than Alternative C (230 acres) and so may result in a slightly larger streamflow increase. This slightly larger potential streamflow increase is still likely to be undetectable.

Streamflow immediately below existing diversion sites on Tenmile Creek and Little Calispell Creek should not be affected by increases in domestic use and snowmaking. A minimum flow of 1 CFS (cubic feet per second) or 449 GPM is a requirement of the water right to protect fish (Eminger 2003). The need for more water would be met largely by increasing the storage tank size. The existing well in Section 7 would be added as a source and combined with the existing diversions from Tenmile and Little Calispell Creeks. The storage tank would be filled by diverting at similar rates to current creek withdrawals but for longer periods of time. Most water withdrawn from streams for domestic use and snowmaking would be returned to the groundwater and surface water systems through the wastewater treatment system and snowmelt. A portion of the increase in domestic and snowmaking use would be supplied by the well in Section 7 with no detectable effect on streamflow.

#### **Water Quality**

Water quality impacts associated with this project are primarily related to activities within RHCAs that may contribute sediment, nutrients, petrochemicals, chlorine, salts, deicers or other contaminants.

##### **Alternative A**

Under Alternative A, the No Action Alternative, existing water quality conditions would continue. Sediment and chemical pollutants from the parking, maintenance and Main Lodge areas would continue to affect RHCAs and water quality. The potential for a catastrophic spill of fuel or chlorine would continue. There is a potential for future action by the Forest Service or Washington Department of Ecology to address water quality along Little Calispell Creek independent of any ski area expansion.

### **Alternatives B and C**

Under the Action Alternatives, water quality would be most affected by:

- Clearing and grading within RHCAs,
- Culvert installations,
- Construction of new wastewater treatment systems,
- Snow disposal within RHCAs,
- Removing some of the existing impacts from within RHCAs.

Action Alternatives B and C would both clear about 1 acre and grade an additional 2 acres within RHCAs (**Table 3-5**). Both Action Alternatives would disturb less than 1 acre of the existing 3.4-acre base area within the RHCA of Little Calispell Creek for reconstruction of the Main Lodge and Plaza/Entryway.

Alternative B would install 13 culverts and replace 3, while Alternative C would install 10 culverts and replace 3. Impacts from these activities would be small, temporary inputs of sediment to the adjacent streams.

Mitigation to reduce the impacts of these activities is described in **Chapter 2 – Mitigation**, and include BMPs such as revegetation, temporary silt fence and waterbars. These mitigation practices reduce sediment impacts by diverting runoff before it reaches exposed soil, by diverting sediment-laden runoff to vegetated areas away from streams, by removing sediment from runoff and by protecting the soil from long-term erosion by providing plant cover. BMPs have proven to be effective at minimizing sediment delivery to streams (Idaho DEQ 2001, Montana DNRC 1998, Rosquist 2002) and would be monitored to ensure their application and effectiveness. Further review for final culvert design would be completed during issuance of a Washington Department of Fisheries Hydraulic Permit as part of the Joint Aquatic Resource Permit Application (JARPA) permitting process (**Chapter 2 - Permits**).

Vegetation removal along streams has the potential to increase stream temperature; however, the acreage of vegetation removal in RHCAs is small (3 acres) and the effect is therefore expected to be undetectable.

Both Action Alternatives B and C would construct new wastewater treatment systems under review by State and local agencies to ensure proper design and construction. No water adverse quality impacts are expected related to these systems.

Both alternatives remove three existing activities within the RHCA that have the greatest potential to pollute the stream – the machinery maintenance facility, the fuel depot and the chlorinator.

Both alternatives modify the current snow storage situation. Snow would be plowed to areas with little potential for petrochemicals to enter the streams. Both alternatives include monitoring to detect petrochemical residues in the spring snowmelt. (see **Chapter 2 – Mitigation and Monitoring**) These actions are expected to reduce any amounts of petrochemicals or other toxic chemicals in the nearby stream.

### **Water Supply**

#### **Alternative A**

Alternative A would retain the existing water system with its two surface diversions, 10,000-gallon storage tank and chlorinator located adjacent to Little Calispell Creek.

### **Alternatives B and C**

Both action Alternatives B and C would add a 50,000 to 70,000 gallon storage tank between Tenmile Creek and Little Calispell Creek. Both would also install 15,000 feet of underground pipeline to connect the new tank and an existing well in Section 7 to the existing water system, the Nordic Center/ice rink and the Mid-Mountain Lodge. Two permanent pipes will be installed under Little Calispell Creek as part of the Flowery Trail Road reconstruction project. These pipes will provide access under the creek for future water and sewer lines without further disturbance to the creek.

## **Wastewater Disposal**

### **Alternative A**

Alternative A would retain the existing wastewater treatment system with its 475,000 gallon lagoon.

### **Alternatives B and C**

Both Action Alternatives B and C would replace the existing system. The replacement system would be the same for both alternatives. The ski area owner and wastewater consulting engineer are currently in negotiation with the Washington Department of Ecology concerning the final design of a replacement system. This design would require approval and oversight by the Department of Ecology. The current design proposed for the site would include primary treatment using a septic tank, secondary treatment using extended aeration and final treatment in pressurized trenches or beds (Johnson 2002). This system would be installed at a 4-acre site outside RHCAs (**Figures 2-3 and 2-4**). Two permanent pipes were installed under Little Calispell Creek as part of the Flowery Trail Road reconstruction project. These pipes would provide access under the creek for future water and sewer lines without further disturbance to the creek.

Both Action Alternatives B and C would require a separate individual wastewater treatment systems for the Mid-Mountain Lodge in Section 7. This system would be standard septic tank and drainfield type system covering less than one acre (Johnson 2002). Wastewater treatment for future private home and lodge development in Section 7 would most likely be provided by septic tank and drainfield type systems (Johnson 2002). All wastewater treatment systems would be installed outside RHCAs.

## **Water Rights**

### **Alternative A**

Alternative A would continue to use the existing water rights from Tenmile and Little Calispell Creeks.

### **Alternatives B and C**

Both Action Alternatives would increase storage capacity but divert the same amount of water under the existing water rights from Tenmile and Little Calispell Creeks. Water would also be used from the well in Section 7 for which there is an existing right.



## **Wetlands**

### **Alternative A**

Alternative A would continue to affect approximately 0.1 acre of wetlands at existing culverts for stream crossings.

### **Alternatives B and C**

Action Alternatives B and C would each affect an additional 0.1 acre of wetlands at new and replacement culvert installations.

## **Riparian Areas and Riparian Habitat Conservation Areas (RHCAs)**

The Flowery Trail Reconstruction Project is changing the entrance road under all alternatives. The reconstruction would move the access road between the main parking area and the Main Lodge to the west, away from Little Calispell Creek. Because of the topography, the new alignment would reduce sediment and the risk of petrochemicals from this road entering a stream. This alignment is found in all alternatives.

### **Alternative A**

Alternative A would continue to affect approximately 13 acres of RHCAs (**Table 3-5**). Potential water quality impacts from sediment, petrochemicals and other contaminants would continue due to runoff from parking, Main Lodge and maintenance areas. The potential for a catastrophic spill of fuel or chlorine would continue. Snow disposal adjacent to Little Calispell Creek would continue to contribute to runoff into the creek.

### **Alternative B**

Alternative B would continue the existing 13 acres of RHCA impacts and would add 3 acres of additional impacts for a total of about 16 acres (**Table 3-5**). Although the acreage of impact within RHCAs would increase, several project components would reduce the potential for water quality impacts. These project components include:

- Eliminating machinery maintenance activities within the RHCA
- Moving the fuel depot to a location outside an RHCA,
- Moving the chlorinator out of the RHCA
- Eliminating snow disposal adjacent to the creek, and using snow disposal areas away from the creek where the snowmelt would not overflow into the creek.

These action combine to remove significant sources of potential contamination.

### **Alternative C**

Alternative C would continue the existing 13 acres of RHCA impacts and would add 3 acres of additional impacts for a total of about 16 acres (**Table 3-5**). However, a reclamation project for a portion of Little Calispell Creek has been designed for this alternative to mitigate existing and proposed impacts. This project would reduce the net effect on RHCAs from approximately 16 acres to approximately 14 acres (**Table 3-5**). The net result on RHCAs under Alternative C would be a 1-acre increase from existing conditions.

The reclamation project for Alternative C would occur in the Little Calispell Creek RHCA adjacent to the Main Lodge (**Figure 2-4**). This 2-acre reclamation project is designed to reduce existing water quality concerns and to mitigate for new RHCA impacts created by the proposed expansion. Components of this project would include:

- Eliminating machinery maintenance activities within the RHCA

- Moving the fuel depot to a location outside an RHCA,
- Moving the chlorinator out of the RHCA
- Remove three small buildings (race, special ops, sheave) and their associated uses to decrease traffic and related impacts near the creek.
- Eliminate a very small area of the existing Plaza Parking Area immediately adjacent to Little Calispell Creek.
- Contour the existing topography to divert runoff from directly entering the creek.
- Create a fenced corridor along the creek and revegetate with woody riparian species (approximately 1 acre).
- Revegetate an additional 1-acre area in the vicinity of the removed buildings, fuel station and former maintenance shop.
- Eliminate snow disposal adjacent to the creek and establish snow disposal sites away from the creek where snowmelt would not flow overland into the creek.

### 3.2.4.2 Cumulative Effects

No other projects that include timber removal are planned in the cumulative effects area (Tenmile Creek Watershed). Other projects that could affect water resources in the future and are in progress or planning include:

- Flowery Trail Road reconstruction,
- Chewelah Peak Learning Center,
- Additional homes on Flowery Trail Community subdivision leased lands, and
- The potential for homes and commercial development on private lands in Section 7.

Environmental analyses for the Flowery Trail Road reconstruction and the Chewelah Peak Learning Center did not identify potential environmental effects on water resources beyond short-term construction activities that would be mitigated using BMPs (Washington Department of Transportation 1996, Wyatt Engineering 2001). The cumulative effects of these two projects in combination with the proposed 49 Degrees North Action Alternatives are unlikely to have a detectable effect on water resources. Potential impacts from additional homes at the Flowery Trail Community subdivision would be distributed over the next 10-20 years and regulated by planning/health authorities. New residential and commercial development on private lands in Section 7 would also be reviewed by planning/health authorities responsible for protecting water quality. Although not identified as an effect in the Flowery Trail Road reconstruction project, runoff containing sanding materials, salt or deicer chemicals could affect surface water quality. The effects of these inputs either alone or in combination with effects from ski area expansion are unlikely to be detectable.

The cumulative effects of this project on water yield in relation to past timber removal projects was evaluated using the Equivalent Clearcut Analysis (ECA) as discussed above. The results of the ECA evaluation indicated that cumulative effects would not exceed the 10% level of concern (see project file – Water Resources).

**Table 3-6: Comparison of Alternatives – Water Resources**

Issue	Alternative A - No Action	Alternative B	Alternative C
<b>STREAMFLOW</b>			
Potential to increase streamflow slightly from clearing for ski runs and lifts (effect likely undetectable)	No change	310 acres	230 acres

Issue	Alternative A - No Action	Alternative B	Alternative C
Potential to decrease streamflow immediately below diversions to limits of water rights	No Change	Potential for a small decrease near diversions	Potential for a small decrease near diversions
<b>WATER QUALITY</b>			
Short-term erosion at graded areas within RHCAs	No change	2.2 acres	2.1 acres
Short-term erosion at cleared sites within RHCAs	No change	1.1 acres	1.0 acres
Short-term erosion at other construction sites within existing RHCA impact areas (Main Lodge expansion, Plaza entryway)	No change	<1 acre	<1 acre
<b>WATER SUPPLY</b>	2 creek diversions + 10,000 gal tank	2 creek diversions & 1 well+50,000 gal tank	2 creek diversions & 1 well+50,000 gal tank
<b>WASTEWATER DISPOSAL</b>	1 acre	4 acres	4 acres
<b>WATER RIGHTS</b>	3 existing rights	3 existing rights	3 existing rights
<b>WETLANDS</b>	0.1 acre	0.2 acre	0.2 acre
<b>RHCA IMPACTS</b>			
Total RHCA Impacts	13 acres	16 acres	16 acres
Reclamation in RHCAs	0 acres	0 acres	2 acres
Net Impacts	13 acres	16 acres	14 acres

### 3.2.4.3 Conclusions

Stream flow has the potential to increase slightly due to tree removal under both alternatives but is likely to be undetectable due to the small acreage (**Table 3-6**). Tree removal acreage is slightly greater under Alternative B. Potential water quality impacts are slightly greater under Alternative B due to more grading, culverts and acres of activities in RHCAs. Total acres of activities in RHCAs are slightly greater under Alternative B than Alternative C (**Table 3-6**). The net acreage of activities in RHCAs is greater under Alternative B (about 16 acres) than Alternative C (about 14 acres) because Alternative C includes about 2 acres of RHCA reclamation.

Alternative B probably does not meet Forest Plan requirements, especially related to INFISH since it does not adequately address the existing 13 acres of RHCA impacts and would add an additional 3 acres of disturbance within the RHCAs.

Alternative C meets Forest Plan requirements, including INFISH, since it proposes elimination of potential adverse effects from activities and reclamation within the RHCA of Little Calispell Creek. No snow will be piled into the stream and proper snow storage design will be reviewed by the forest hydrologist or fish biologist (see **Chapter 2 – Mitigation**).

## 3.2.5 Air Resources: Affected Environment

### 3.2.5.1 Regulatory Framework

#### Clean Air Act

The 1967 Clean Air Act and Amendments to the Act (1972, 1977, 1990, 42 USC 7401 et seq.) provide direction to protect and enhance the quality of the nation's air resources and protect public health and welfare. The Environmental Protection Agency (EPA) developed primary air pollution standards in compliance with the act and authorized the Washington Department of Ecology to enforce the Clean Air Act.

Air quality particulate standards under the Clean Air Act were originally defined in terms of Total Suspended Particulate. More recently, the EPA refined the particulate standard to focus on particulates less than 10 microns in diameter (PM<sup>10</sup>). The 24-hour PM<sup>10</sup> standard is 150 micrograms per cubic meter. These PM<sup>10</sup> particles are too small to be effectively filtered by the human respiratory system and can cause respiratory problems, especially for those who are predisposed to respiratory ailments. Small smoke particulates are also suspended in the atmosphere for long periods, contributing to regional haze and reduced visibility.

The Clean Air Act defines areas found to be in violation of standards as non-attainment areas. Pollution sources in these areas are subject to tighter restrictions. The analysis area is not located within a non-attainment area. The nearest designated non-attainment areas for criteria pollutants are :

- Spokane Washington is “serious” for carbon monoxide and “moderate” for PM<sup>10</sup>. Spokane is located about 50 miles south of the project area.
- Sandpoint Idaho is “moderate” for PM<sup>10</sup>. Sandpoint is located about 45 miles east of the project area.

The dominant air flow in the area is from west to east. Spokane is not downwind of the project area under most weather conditions. Sandpoint is located downwind from the project area.

The Clean Air Act also contains provisions to protect Class I airsheds. The nearest Class I airsheds are the Spokane Indian Reservation (about 20 miles southwest of the project area) and the Cabinet Wilderness Area (about 80 miles east of the project area). The dominant air flow in the region is from west to east. The Spokane Reservation is generally upwind of the project area and the Cabinet Wilderness is generally downwind.

### **3.2.5.2 Methods**

Air resources in the analysis area were assessed through site visits, consultation with Forest Service specialists, unpublished file information, EPA air quality data (EPA 2003), reviews of information for previous 49 Degrees North expansion projects, and review of NEPA documents for other projects on the Colville National Forest.

### **3.2.5.3 Area of Analysis**

The area of analysis for direct, indirect and cumulative effects is MA 3C and the airsheds that include Chewelah on the west and Cusick/Usk on the east. The area of analysis also includes the nearest Class I airsheds and non-attainment areas identified above.

### **3.2.5.4 Existing Conditions**

There are no major point sources of air emissions within 30 miles of the project area. Existing sources of non-point emissions are from motor vehicles, agriculture, forest practices and wildfire. Automobiles and trucks on local roadways release carbon monoxide and PM<sup>10</sup> particulate, mostly in the form of dust.

Motor vehicle traffic along unpaved portions of the Flowery Trail Road has created non-point sources of carbon monoxide and particulates in the form of dust. Paving scheduled for these sections is expected to reduce particulate levels (Washington State Department of Transportation 1996). Although more vehicles would be traveling the Flowery Trail Road after it

is improved, motor vehicle emissions are not expected to significantly increase (Washington State Department of Transportation 1996). High concentrations of carbon monoxide emissions are not expected after road improvement.

Fire-generated air impurities were a natural by-product of the historic fires that frequented the Pacific Northwest over the past thousands of years. Prior to recent fire suppression, an average of 800,000 acres burned annually in the Pacific Northwest. Settlement and the dramatic increase in human population over the past 200 years have increased the concern for the effects of smoke on air quality and human health.

Smoke from prescribed fire and wildfire and dust from rock pits have the potential to cause negative effects on air quality. The use of prescribed fire for ecosystem restoration can produce enough fine particulate matter to be a public health and welfare concern. Fine particulates in smoke can travel downwind, impacting air quality in local communities, causing a safety hazard on public roads, impairing visibility, and causing a general nuisance to the public.

The 49 Degrees North Mountain Resort lies between Chewelah on the west and Cusick/Usk on the east. These towns experience high-pressure inversions in both winter and summer. During these events, smoke and fog often settle in the local valleys and populated areas.

### **3.2.6 Air Resources: Environmental Consequences**

Smoke management is controlled by the State of Washington, and any prescribed fire that consumes more than 100 tons of fuel within a 24-hour period requires approval from the State. By considering cumulative effects, ignition methods, timing, weather and smoke dispersion potential, the State maintains air quality standards and limits effects to acceptable levels. The State considers all burning on Federal, State and private lands when managing smoke emissions so that air quality standards are met.

#### **3.2.6.1 Direct and Indirect Effects**

The principle potential effect on air resources would be smoke from slash disposal associated with clearing for new ski runs, ski lifts, parking areas, the Nordic Center/ice rink and the wastewater treatment system. This would be a short-term, temporary impact that would have the potential to affect local communities and valleys. Adherence to mitigation measures and the State program would ensure that both Action Alternatives would have little effect on local communities and valleys.

Alternative A would have the least effect on air resources since no clearing or burning would occur. Alternative B would have the greatest potential impact on air resources since it includes more acres of clearing and thinning activities compared with Alternatives C and A (**Table 2-5**).

The Spokane Reservation is located 20 miles west of the project area, and prevailing winds blow from west to east. Consequently, smoke from prescribed fires proposed by the alternatives would not affect the Class I airsheds associated with the reservation. The Cabinet Wilderness Area is located 80 miles to the east of the project area and may be affected slightly if wind and weather conditions concentrate project smoke in that direction without significant dispersal.

The non-attainment area of Spokane, located upwind from the project area, is not expected to be affected by the proposed action. The non-attainment area of Sandpoint is located 45 miles downwind of the project area and may be affected by a small incremental increase in particulate if wind and weather conditions concentrate smoke in that direction without significant dispersal.

### 3.2.6.2 Cumulative Effects

Other identified projects on National Forest System Lands (NFS Lands) that include clearing and burning within the cumulative effects area are:

- Quartzite Watershed Management Project,
- Gardin-Taco Project,
- New Moon Project, and
- Flowery Trail Road Reconstruction Project.

**Smoke:** Limited clearing and burning is also likely to occur in the reasonably foreseeable future for additional homes at the Flowery Trail Community subdivision and for residential and commercial development on the private lands in Section 7. Burning would also likely occur on other private, State and Federal lands in the area although no other projects have been identified at this time. The cumulative effects of these projects are difficult to determine without precise information on the timing and amount of this additional burning. The Washington State smoke management program would consider the amount and timing of all burning to ensure air quality standards are met.

**Dust and Vehicle Emissions:** The asphalt paving scheduled for unpaved sections of the Flowery Trail Road is expected to reduce particulate levels related to motor vehicle traffic (Washington State Department of Transportation 1996). Although more vehicles would be traveling the Flowery Trail Road after it is improved, carbon monoxide emissions are not expected to significantly increase because of road improvement (Washington State Department of Transportation 1996). Stevens County actual traffic counts along the Flowery Trail Road, taken in May 1995, reported 78 Average Daily Traffic (ADT) at the Stevens County/Pend Oreille County line. Traffic volumes can vary widely, and are related primarily to activities occurring on private developments and on the Colville National Forest, including log hauling and recreational use. Traffic related to the ski area on weekends and holidays have exceeded 700 vehicle round trips per day (Eminger 2002a). After the ski area expansion is complete, skier visits are expected to increase by 20% in 5 years (Eminger 2002a). This increase in traffic would cause a corresponding increase in vehicle emissions and particulate from road sanding during the winter. The combined increase in traffic emissions from improvement of the Flowery Trail Road, the Chewelah Peak Learning Center, continued developments in the Flowery Trail subdivision and private land in Section 7, and the expansion of the ski area is not expected to create conditions that exceed clean air standards.

### 3.2.6.3 Conclusions

Alternative A would have the least effect on air resources (no clearing or thinning and burning) followed by Alternative C and Alternative B (see acres of impact in **Table 2-5**). All alternatives would meet Forest Plan requirements for monitoring and compliance with State Air Quality Visibility Standards. Activities would maintain air quality at a level adequate for protection and use of the National Forest resources, and meet or exceed applicable Federal and State standards and regulations. All prescribed burning would be planned and conducted in accordance with State smoke management plans.

## **3.3 BIOLOGICAL ENVIRONMENT**

### **3.3.1 Fisheries: Affected Environment**

#### **3.3.1.1 Regulatory Framework**

The National Forest Management Act (NFMA) (36 CFR 219) requires that the Forest Service manage for a diversity of fish habitat to support viable fish populations. Section 7 of the Endangered Species Act of 1973 (50 CFR 17, as amended) includes direction that federal agencies, in consultation with the U.S. Fish and Wildlife Service, would not authorize, fund, or conduct actions that are likely to jeopardize the continued existence of any threatened or endangered species. Executive Order 12962 (Clinton 1995) states that it is the duty of Federal Agencies to “improve the quantity, function, sustainable productivity, and distribution of aquatic resources for increased recreational fishing opportunities” to the extent permitted within the law and where practicable.

The Forest Plan for the Colville National Forest (USDA Forest Service 1988a) provides management goals and objectives for the protection of the fisheries resource. The Inland Native Fish Strategy (INFISH) amended the Forest Plan in August of 1995 and contains additional standards and guidelines to protect the aquatic environment (USDA Forest Service 1995). INFISH sets the criteria for delineating Riparian Habitat Conservation Areas (RHCAs), which are classified in all forest watersheds. INFISH also specifies specific riparian and aquatic Riparian Management Objectives (RMOs) relating to pool frequency, water temperature, bank stability, lower bank angle, width/depth ratio, and density of large woody debris. INFISH guidelines for recreation management specify that facilities or use of facilities within RHCAs must not prevent attainment of RMOs or adversely affect native fish.

RHCAs within the analysis area are shown in **Figures 3-1** and **3-2**. Perennial fish-bearing streams (Category 1) have a 300-foot RHCA on each side of the stream; perennial non fish-bearing streams (Category 2) have a 150-foot RHCA on each side of the stream; and non fish-bearing, intermittent streams (Category 4) have a 50-foot buffer on each side of the stream.

The desired future condition for aquatic and riparian ecosystems is that stream and riparian conditions fully support fish populations under normal climatic conditions and these ecosystems remain resilient and recover rapidly from damage. Specific mandates in the Forest Plan that relate to achieving the desired future condition for aquatic and riparian ecosystems are:

- Protect existing fish habitat from degradation where feasible.
- Rehabilitate habitats that have been degraded as a result of management activities.
- Emphasize management of native fish habitat.
- Road crossings of Category 1 and Category 2 streams will be kept to a minimum.
- New crossings will be constructed at areas of the least possible stream gradient.
- Bridges or bottomless arches will be constructed instead of culverts unless culverts can be constructed to allow fish passage.
- Drainage from roads will be dispersed prior to entering streams.
- The general character of the aquatic and riparian habitat will be retained.
- The streamside vegetation will be managed in order to maintain a natural source of large woody material.

- Instream barriers to migration will be removed or replaced unless desired to prevent immigration of undesirable fish or other organisms.
- Maintain water quality parameters within range of good fish habitat conditions, meeting state water quality standards at a minimum.

### **3.3.1.2 Methods**

The fishery resource in the analysis area was assessed through site visits, consultation with Forest Service biologists, unpublished file information, reviews of Biological Assessments for previous 49 Degrees North expansion projects, and review of NEPA documents for other projects on the Colville National Forest. Guidance for analysis of activities in RHCAs was found in "Inland Native Fish Strategy Environmental Assessment – Decision Notice and Finding of No Significant Impact" (USDA Forest Service 1995).

### **3.3.1.3 Area of Analysis**

The area of analysis for direct and indirect effects is MA 3C and the adjacent private lands in Section 7. Also included is the proposed Nordic trail in the NW¼ of Section 6 and the SE¼ of Section 36, both adjacent to MA 3C. The cumulative effects area is the Calispell Creek watershed.

### **3.3.1.4 Fish Species Addressed in this EIS**

The fish to be addressed in this EIS are those with habitats and populations at risk (Threatened, Endangered and Sensitive)

#### **Endangered and Threatened Species**

Provisions of the Endangered Species Act direct federal agencies to seek to conserve threatened and endangered species and to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of threatened or endangered species, or result in adverse modification of their critical habitats. The only Threatened or Endangered fish species in the vicinity of this analysis area is bull trout, a threatened species.

#### **Sensitive Species**

Management of sensitive species is directed under the National Forest Management Act and requires that no proposed federal action on National Forests contribute to a trend toward federal listing or loss of viability to populations or species. Sensitive plant and animal species are identified by the Regional Forester for which population viability may be a concern as evidenced by notable current or predicted downward trends in population numbers or density or notable current or predicted downward trends in habitat capability that would reduce a species' existing distribution. The sensitive species in this analysis area are:

- Westslope cutthroat trout (*Oncorhynchus clarki lewisi*), and
- Interior redband trout (*Oncorhynchus mykiss gairdneri*)

### **3.3.1.5 Existing Conditions**

The headwaters of Little Calispell, Nelson and Tenmile Creeks, which are high-gradient (greater than 9 percent) perennial streams, originate in the analysis area (**Figures 1-1 and 1-2**). Little Calispell Creek is poor fish habitat because of its high gradient and low channel stability rating



(Larson 1992). Tenmile Creek has good fishery habitat potential because it has a lower gradient, good channel-stability rating, and abundant in-stream woody debris (Larson 1992). The lower reaches of these streams support populations of introduced eastern brook trout and rainbow trout (Mosconi et al. 1994).

Currently, a parking area for the ski area occupies 2.7 acres of the Category 1 RHCA of Little Calispell Creek (**Figure 1-3** and **Table 3-5**). Several ski runs cross RHCAs in the upper reaches of Tenmile and Little Calispell creeks, both fish-bearing streams. The ski runs have been cleared of trees and shrubs and the creeks are directed through culverts under the ski runs. Existing ski runs occupy 7 acres in the RHCA of Little Calispell and Tenmile creeks. The existing Main Lodge and other buildings occupy 3.4 acres of the RHCA of Little Calispell Creek. A water withdrawal intake is also located in the RHCA of Tenmile Creek on the ski area. The maintenance shop, fuel storage, and the water chlorinator are located in the RHCA of Little Calispell Creek. Snow cleared from parking areas is deposited near Little Calispell Creek and within its associated RHCA.

### **Threatened and Endangered Species – bull trout**

There are no bull trout in or near the analysis area; however, historically they were native to the Calispell Creek watershed. Bull trout are found in the Pend Oreille River, downstream from the project area. A natural falls and a dam at Power Lake, about 10 miles downstream from the ski area, prevents potential upstream movement of bull trout or any other fish to the vicinity of the project area (Shuhda 2001).

### **Sensitive Species**

#### **Westslope cutthroat trout (*Oncorhynchus clarki*)**

Westslope cutthroat trout is on the USFS Region 6 List as a Sensitive Species. Within the project area, a westslope cutthroat population exists in Tenmile Creek above an impassable culvert on County Road 2902, on the northern border of the ski area. The cutthroat trout in Tenmile Creek are very limited in distribution but appear to be reproducing based upon size range of observed individuals. The population of Tenmile Creek has been genetically analyzed by the University of Idaho and found to be an introgressed westslope cutthroat trout population with coastal rainbow/westslope cutthroat trout hybrids constituting 57% of the fish sampled.

#### **Interior redband trout (*Oncorhynchus mykiss gairdneri*)**

Interior redband trout is on the USFS Region 6 List as a Sensitive Species. Rainbow trout populations have been found throughout the Colville National Forest. Genetic testing of many of these populations has determined that presently 13 pure redband trout populations exist on the forest. These populations are found in tributaries of the Kettle River, tributaries to Lake Roosevelt, tributaries to the Colville River and a tributary to Curlew Lake.

Pure redband trout are not known to occur in the Tenmile Creek watershed or anywhere in the Pend Oreille River drainage (Shuhda 2002). Coastal rainbow/interior redband trout hybrids and pure coastal rainbow trout have been found in the North and Middle Forks of Calispell Creek and Winchester Creek. The rainbow trout in these streams are successfully reproducing based upon size range and numbers.

Stocking of hatchery rainbow trout may have eliminated or greatly reduced the distribution of native redband trout over their original range (Mosconi et al. 1994).

### 3.3.2 Fisheries: Environmental Consequences

#### 3.3.2.1 Alternative A – The No Action Alternative

Management of the ski area would continue to maintain existing vegetation, site hydrology, and sediment delivery from roads. Parking lots, fuel storage, and the maintenance shop adjacent to Little Calispell Creek would continue to be potential sources of sediment, fuel, and other contaminants to the creek. The water chlorinator would remain in the channel of Little Calispell Creek and an accident could release chlorine to the creek. A total of 13 acres of parking lots, buildings, and other facilities would continue to occupy the RHCAs (**Figure 1-3** and **Table 3-5**).

The entrance to the Resort and the road to the Main Lodge is being moved through the reconstruction of the Flowery Trail road. The road accessing the main lodge is being moved slightly to the northeast, thereby increasing the distance between the road and Little Calispell Creek. This action, common to all alternatives, will reduce sediment from this source into Little Calispell Creek.

##### **Bull trout**

There are no bull trout in or near the analysis area. A natural falls and a dam at Power Lake, about 10 miles downstream from the ski area, prevents potential upstream movement of bull trout or any other fish to the vicinity of the project area (Shuhda 2001).

**Determination:** Alternative A would have no effect on bull trout.

##### **Westslope cutthroat trout**

The implementation of the no action alternative would continue to allow minor soil movement into Tenmile Creek to continue from use of the ski area. Low levels of sediment would maintain the present level of embeddedness of the streambed substrate. Embeddedness in upper Tenmile remains low primarily due to the steep gradient (>5%) that allows sediment to move quickly through the habitat of the westslope cutthroat trout. This population does not appear to be limited by excess sediment but rather limited habitat due to isolation above the impassable culvert.

**Determination:** No effect would be expected if this alternative were implemented.

##### **Interior redband trout**

The implementation of the no action alternative would allow soil movement and contaminants into the streams to continue from use of the ski facilities, road systems and ski run/trail crossings in riparian areas. Habitat conditions downstream and within the analysis area would continue to be degraded by the continuing operation of the ski area contributing sediment and possible contaminants. However, there are no pure redband trout occupying this habitat in or downstream of the analysis area.

**Determination:** No effect on pure redband trout would be expected if this alternative were implemented

#### 3.3.2.2 Effects Common To Alternatives B and C

The following actions would have some impact on the Riparian Habitat Conservation Areas:

- Construction of new cleared ski runs,
- Grading of new and existing ski runs,
- Clearing for and construction of Nordic trails,
- Installation and replacement of culverts on ski runs and trails,

- Removal of buildings, and
- Expansion of the main lodge.

While these actions are common between the two alternatives, the extent of these actions varies between the alternatives. The magnitude of these impacts depends on the location and the number of acres impacted.

Grading of ski runs would lessen the grade near the bottom of ski runs to reduce safety hazards. Grading of ski runs would affect about 1.6 acres of Category 1 and 0.2 acres of Category 2 RHCAs. Alternative B would result in 0.4 acres of grading in Category 4 RHCAs, compared to 0.3 acres of grading in Category 4 RHCAs with Alternative C (**Figures 2-3 and 2-4 and Table 3-5**).

Grading would take place in RHCAs because portions of expanded runs transition from steep slopes to relatively flat terrain at streams. The need to gradually reduce the steepness of the grade for safety necessitates grading within the RHCA. Grading would occur during the construction phase of the project and would be a short-term disturbance. The potential for grading to contribute sediment to streams would be reduced by placement of silt barriers, rapid revegetation of disturbed soils, and implementation of Best Management Practices (see **Chapter 2 - Mitigation**).

Following grading, ski runs rapidly become revegetated, through seeding and natural colonization by resident plants. Revegetated ski runs at graded sites would have the potential to contribute sediment to streams over the short-term (one-year following construction), but would have negligible effects over the long term as stands of grasses and other herbaceous species become established on graded portions of ski runs.

**Table 3-7: Stream Crossings Proposed in the Action Alternatives**

Creek	RHCA Category	Culvert Work	B	C
Tenmile Creek	1	New	1	1
	4	New	3	3
	4	Replace	1	1
Little Calispell Creek	4	Replace	1	1
Unnamed creek, perennial, not fish bearing	2	New	3	3
Unnamed creek, intermittent	4	New	1	0
Nelson Creek	4	New	5	3
	4	Replace	1	1
<b>Summary</b>				
Culverts Replaced				
On intermittent streams -- Cat. 4 RHCA			3	3
New Culverts				
On perennial, fish-bearing streams -- Cat. 1 RHCA			1	1
On perennial streams with no fish-- Cat. 2 RHCA			3	3
On intermittent streams -- Cat. 4 RHCA			8	5
On an intermittent stream (Cat. 4), but located within a Cat. 1 RHCA <sup>2</sup>			1	1
Total number of new culverts to be installed			13	10
Total number of stream crossings where a culvert would be either replaced or installed			16	13

The Category 1 RHCA of Tenmile Creek would experience direct effects from the Action Alternatives through culvert construction, grading, and removal of about 1 acre of overstory

<sup>2</sup> This is an intermittent stream, tributary to Tenmile Creek on State Land in Section 6. While the stream is intermittent (Cat. 4 RHCA) the crossing would be located within the Category 1 RHCA which extends along Tenmile Creek.

vegetation for the trail connecting the Ski Area to the Flowery Trail Community subdivision. The culvert to be installed in Tenmile Creek would be sized to pass 100-year floods and to allow fish passage. Maintaining low gradients in culverts would control water velocities and ends of culverts would not be perched above the level of the stream, blocking fish passage. Criteria for issuance of a Washington Department of Fish and Wildlife Hydraulic Permit would specify features of culvert design and installation. Placement of culverts would generate sediment to streams during the construction phase of the project, but this would have short-term impact on native fish. Culverts would be installed according to the requirements of the Hydrologic Project Approval Permit from the Washington State Dept. of Fish and Wildlife. Current policy is to install culverts between July 1 and August 31.

With construction of Nordic trails and placement of culverts, 25-foot-wide strips of woody riparian vegetation would be removed from RHCAs. Ski trails would remove overstory vegetation, but herbaceous vegetation in the RHCAs would not be removed except where grading and culvert installation is necessary.

Soil erosion may occur during construction of Nordic trails. Nordic trails constructed on steep slopes would require cut and fill construction similar to roads. Grading will be necessary to allow grooming machine access and periodic vehicle maintenance during snow-free periods. This would expose soil to erosion during construction and revegetation. Long-term soil erosion from these Nordic trails should be minimal since they would be completely revegetated except for the vehicle tracks from summer maintenance, and tracks from horses, mountain bikes, and hikers. Cross-country trails would be closed to motorized vehicles (except for maintenance) and receive much less summer use than a typical road. Road and trail construction BMPs identified in **Chapter 2 – Mitigation**, would be applied to Nordic trail construction where appropriate.

Both Action Alternatives would include removal of the chlorinator, fuel station, and maintenance shop activities from the RHCA of Little Calispell Creek. This action would reduce the potential for fuel or chlorine to enter the creek.

Expansion of the existing Main Lodge and plaza (**Figure 2-3** and **2-4**) would have little effect on the existing condition of the RHCA of Little Calispell Creek. Only a small portion (<1 acre) of the expanded Main Lodge would be in the RHCA and this addition would be on the outer edge of the RHCA, away from the stream.

Construction of a new Mid-Mountain Lodge and on-site drain field would be on mountain slopes outside RHCAs, with substantial areas of buffering vegetation between the construction site and perennial or intermittent streams. This lodge would not affect aquatic or riparian habitats.

Construction of the new maintenance shop would be outside the RHCA of Tenmile Creek. Impacts from the new maintenance shop should be low due to the distance from the stream and the presence of the original Flowery Trail Road. This elevated roadway provides a barrier to overland flow of surface runoff from the proposed maintenance shop to Tenmile Creek (**Figure 2-3** and **2-4**).

With all of the alternatives, construction of new residences, condos, a hotel or hostel, and a commercial village within private land in Section 7 are a reasonably foreseeable actions. This residential area would occupy upland sites that have been logged and would not be located within RHCAs.

Impacts to fisheries resources could occur if sediment delivery to fish-bearing streams and water temperatures increase or bank stability decreases, or alterations of stream flow volumes and timing occur. Sediment can affect adult salmonids by changing behavior, reducing available habitat, reducing reproductive success, increasing stress, and reducing food supply. Salmonid fishes avoid areas with turbid water. In streams where turbidity is elevated over long distance or for a long period of time, fish populations can be reduced or eliminated. In addition, high levels of suspended sediment can result in loss of visual capability, leading to reduced feeding and depressed growth rates. High levels of sediment can deplete benthic invertebrate populations, reducing the available food supply to fish. Sediment can also fill pools, fill interstitial spaces of spawning size streambed substrate and blanket structural cover, reducing available habitat for salmonids.

Water temperature is a critical for salmonids. Trout are adapted to cold-water streams and intolerant of large increases of temperature in summer. Temperature increases are often associated with clearing of riparian vegetation that shades streams from direct solar radiation.

Potential impacts from removal of riparian vegetation associated with grading, trail construction, and installation of culverts would reduce stream shading where ski trails cross streams and RHCAs. This small reduction of shading, mostly at crossings of ephemeral streams would not likely affect water temperatures in fish-bearing streams. Placement of culverts would cause short-term increases in turbidity increases in Tenmile Creek, but construction during the low-flow period in late summer would minimize these increases. There would be a slight potential reduction in recruitment of large woody debris from construction of ski trails but this effect would be negligible given the remaining unaffected forest within the RHCAs. Stream channel stability would not be affected by the Action Alternatives.

Proposed construction activities would have negligible effects on water quality and fisheries. Based on the small amount of riparian vegetation affected with the Action Alternatives (1 to 2 acres), small size of the streams, and location high in the headwaters of the drainage, and absence of fish in most affected streams (i.e., Category 2 and Category 4 RHCAs) impacts to water quality, quantity, and fisheries are expected to be small.

Sediment increases would largely be limited to temporary releases during culvert installation and grading. Silt fences or other silt barriers would be installed to prevent sediment generated by grading from entering streams and disturbed areas would be hydromulched and seeded as soon as practical after construction. Water yield changes, if any, would be too small to measure. As a result, there would negligible impacts to water quality and downstream fisheries resources in Tenmile and Little Calispell creeks.

The INFISH guidelines specify that activities that could affect the attainment of RMOs must be avoided if possible. The proposed activities in RHCAs cannot be avoided if the proposed developments are to take place. The existing ski area and facilities largely determine where new facilities would be placed. New ski runs must be placed where they are compatible with slope features and other ski area facilities. Grading would take place to reduce safety risk because of abrupt slope transitions. Abrupt slope transitions occur where ski runs contact flood plains of major drainages in RHCAs. Currently, the Main Lodge is located in the RHCA of Little Calispell Creek. The expansion, by necessity, is attached to the existing lodge; however, the proposed expansion is located in the RHCA farthest from the stream. The base of the ski area where the new sewer facilities and other developments would take place is currently situated in and among RHCAs of several drainages. It would not be possible to meet the purpose and need of the proposed project without some activities in the RHCAs. Substantial modifications

have been made over the development of alternatives to minimize construction activities in RHCAs. Alternative C reflects minimization of adverse effects to RHCAs.

### **Bull trout**

A Biological Assessment (BA) was prepared for this project. This BA was forwarded to the U.S. Fish and Wildlife Service for their review January 21, 2004. The U.S. Fish and Wildlife Service will issue a Biological Opinion (BO) before the Record of Decision is signed. This BA addresses possible effects to bull trout. The determination is summarized here and the BA is available in the project file.

There are no bull trout in or near the analysis area. A natural falls and a dam at Power Lake, about 10 miles downstream from the ski area, prevents potential upstream movement of bull trout or any other fish to the vicinity of the project area (Shuhda 2001).

**Determination:** The expansion of developed recreational use at 49 Degrees North Resort in the Calispell Creek watershed may affect but is not likely to adversely affect bull trout and their proposed critical habitat in Calispell Creek or Box Canyon Reservoir.

### **Westslope cutthroat trout**

Implementation of action alternatives B and C would include the harvest of timber in the RHCA of a few areas along Tenmile Creek for the construction of new ski runs/trails within this watershed containing this introgressed cutthroat population. These alternatives may temporarily increase the level of soil movement into certain streams, including Tenmile Creek, from new stream crossings and within the analysis area. The results may be a temporary increase in the embeddedness of the substrate and pool filling in segments immediately below the sites of these proposed activities. High gradients in upper Tenmile Creek are expected to flush out most of any additional sediment due to implementation of any of the action alternatives. Any significant increase in soil movement into Tenmile Creek is expected to be temporary until armoring and revegetation of crossings is completed. Depending upon timing, any temporary increase in the level of embeddedness could reduce the available amount of winter rearing pool habitat and may decrease the available spawning area for cutthroat trout possibly influencing their winter survival and reproductive success respectively. Any of the action alternatives “may affect” westslope cutthroat trout and their habitat in Tenmile Creek where this subspecies presently exists. Any significant effect is expected to be temporary.

**Determination:** Implementation of either action alternative is not expected to contribute to a trend toward federal listing or loss of viability to populations or species due to the temporary nature of the expected increase in soil movement into upper Tenmile Creek.

### **Interior redband trout**

**Determination:** Since pure interior redband trout are not known to inhabit the project area nor the larger watershed, there is “no effect” from implementation of any action alternative to this subspecies or its habitat.

### **3.3.2.3 Effects of Alternative B**

Alternative B would include install 13 new culverts and replace 3 existing culverts. Of the new culverts, 2 would be constructed in the Category 1 RHCA of Tenmile Creek, 3 would be constructed in a Category 2 RHCA, and 8 would be constructed in Category 4 RHCAs of intermittent streams (**Figure 2-1**).

Alternative B would remove 310 acres of forest vegetation mostly from upland sites not in RHCAs. Strips of riparian vegetation, 25 feet wide, would be removed where Nordic trails cross Category 1, Category 2, and Category 4 RHCAs.

Proposed new parking areas (5 acres) with this alternative would be outside of RHCAs and would be contoured to prevent surface runoff from entering Little Calispell Creek; however, sediment, fuel, and other contaminants from vehicles from snow piling in the RHCA of Little Calispell Creek would have the potential to enter the stream from existing parking areas and from other facilities within RHCAs in the project area. Alternative B is considered to be in non-compliance with the Forest Plan due to adverse effects to fish and fish habitat from excessive sand, salt and contaminants and potential violation of state water quality standards downstream of these facilities .

The new facilities proposed under Alternative B would have negligible adverse effects on aquatic and riparian areas with proposed mitigation and implementation of BMPs.

#### **3.3.2.4 Effects of Alternative C**

Alternative C would install 10 new culverts and replacement of 3 culverts. Like Alternative B, 2 culverts would be constructed in the Category 1 RHCA of Tenmile Creek, and 3 would be constructed in Category 2 RHCAs. This alternative would have 6 new culverts constructed in Category 4 RHCAs, compared to 8 new culverts for Alternative B (**Figure 2-2**).

Alternative C would result in removal of 230 acres of forest vegetation mostly from upland sites. Strips of vegetation, 25 feet wide, would be removed where culverts or armored stream crossing are constructed and where ski trails cross Category 1, Category 2, and Category 4 RHCAs.

Rehabilitation of Little Calispell Creek with Alternative C would result in enlargement of two culverts presently in place, moving the chlorinator, fuel depot and four small buildings farther from the creek, and revegetating 2 acres of the riparian zone of the creek. This rehabilitation would help offset increases in short-term sediment that would be generated with vegetation removal associated with Alternative C and would help satisfy Riparian Management Objectives identified in INFISH.

Alternative C, with removal of the chlorinator, fuel depot and machine maintenance out of the RHCA and rehabilitation of the riparian area of Little Calispell Creek, would aid in maintaining the riparian goals of INFISH.

Herbaceous vegetation would not be removed from ski runs and would become denser with removal of the overstory canopy of trees and shrubs. Construction and use of ski runs would have negligible effects on fisheries and water quality

Proposed new parking areas (5 acres) with this alternative would be outside of RHCAs and would be contoured to prevent surface runoff from entering Little Calispell Creek. Alternative C eliminates most of the snow disposal that currently occurs within the RHCA. Snow plowing would be modified so that snow removed from parking areas and the plaza would not be placed adjacent to Little Calispell Creek; however, some snow removed from parking areas would remain in the RHCA. Approximately 0.25 acre in the Category 1 RHCA of Little Calispell Creek would be used for snow disposal from a parking area. The snow would be piled within a specially designed storage area to avoid snowmelt from entering the creek and adversely

affecting fish and fish habitat through the introduction of residue from the parking area which may include sand, salt, gasoline, oil, antifreeze and other compounds.

With this alternative, there would be a net increase of 1 acre of disturbance to RHCAs, as compared to existing conditions (Alternative A). Disturbance in RHCAs would be increased from 13 acres with Alternative A to 14 acres with Alternative C.

Although sediment would be generated during the construction phases of this alternative, these increases would be of short duration and reduced in magnitude with implementation of BMPs. Timing of the construction would avoid spawning of westslope cutthroat trout and coincide with low streamflow periods. Implementation of these measures and BMPs would prevent adverse impacts to fisheries from sediment. Water quality would improve and support stable, productive, diverse, native, riparian and aquatic systems. Stream channel integrity would not be adversely affected and instream flows would support healthy riparian and aquatic habitats. Natural timing and variability of water table elevation would be maintained in streams and associated wetlands.

The following table illustrates the differences in potential impacts to aquatic resources.

**Table 3-8: Comparison of Action Alternatives - Aquatic Resources**

Concern	Alternative B	Alternative C
Total tree removal	310 acres	230 acres
Disturbances in RHCAs	16 acres	16 acres
Water quality mitigation	0 acres	2 acres
Stream Crossings	13 new culverts 3 culvert replacements	10 new culverts 3 culvert replacements

### 3.3.2.5 Cumulative Effects

Other projects in the cumulative effects area that could affect fisheries resources in the future and are in progress or planning include:

- Flowery Trail Road reconstruction,
- Chewelah Peak Learning Center,
- Additional homes on Flowery Trail Community subdivision leased lands,
- New residential and commercial development on private lands in Section 7,
- Ongoing logging and road building.

The proposed action, logging and road building on private, state and federal timberlands and building construction are not anticipated to cumulatively increase the risk of adverse effects on fish and other aquatic resources for the following reasons.

Future logging in the Calispell Creek watershed may increase the level of soil erosion into the stream. However, implementation of state regulations and Forest Service BMPs and mitigation, where these apply regarding riparian protection, should limit effects to fish and fish habitat

The major reconstruction of the Flowery Trail county road will be completed before any project work within the ski area master plan starts. Any increase in soil movement from the road cut and fillslopes is expected to be minor due to initial installation of silt fence, straw bales and slash, the armoring of slopes and ditches and the revegetation of disturbed sites. The paving of the entire native surface road in the Calispell Creek drainage is expected to greatly reduce the prior amounts of introduced sediment that were occurring through historic use and maintenance of the road.



Environmental analyses for the Flowery Trail Road reconstruction and the Chewelah Peak Learning Center did not identify potential environmental effects on fisheries resources beyond short-term construction activities that would be mitigated using BMPs (Washington Department of Transportation 1996, Wyatt Engineering 2001).

Potential impacts from additional homes at the Flowery Trail Community subdivision would be distributed over the next 10-20 years and regulated by planning and health authorities. New homes or commercial development on private lands in Section 7 would also be reviewed by planning and health authorities responsible for protecting water quality.

Removal of vegetation to create ski runs and trails in the RHCAs within the project area would have the potential to increase sediment to streams but measurable amounts are expected to be small and temporary due to implementation of BMPs. Reclamation and the removal of detrimental facilities and activities within the RHCA of Little Calispell Creek should reduce the present level of effects to fish and fish habitat from the existing operation of the ski area.

#### **Cumulative Effects for westslope cutthroat trout**

Logging and road construction is expected to continue on private lands in the Calispell Creek watershed. The implementation of the no action alternative would allow the present levels of soil movement and contaminants into the streams to continue through the ongoing operation of recreational facilities in riparian areas. Sediment introduction and contaminants from tributaries in the project area would continue to affect habitat downstream of the project area within the larger Calispell Creek watershed. The implementation of the no action alternative would continue to allow minor soil movement into Tenmile Creek to continue from the maintenance and use of the ski area. Low levels of soil movement would maintain the present level of embeddedness of the streambed substrate in upper Tenmile Creek. Embeddedness in upper Tenmile Creek remains low primarily due to the steep gradient (>5%) that allows sediment to move quickly through the habitat of the westslope cutthroat trout.

No cumulative effects are expected to the westslope cutthroat trout population in upper Tenmile Creek under implementation of either alternative as other recent and proposed activities within the larger watershed are located downstream of this isolated cutthroat population. All other westslope cutthroat trout populations in the Calispell Creek watershed are not affected as these are not located directly downstream of the flows from the project area or other areas of ongoing or proposed disturbances. Alternatives B and C propose some removal of vegetation within the RHCAs of cutthroat trout occupied habitat through the construction of new ski trail crossings. These activities, under these action alternatives, propose a limited amount of disturbance in streams within the project area that otherwise are in a fairly functional state providing bank stabilization and overhead shade among other functions. Any significant increase in sediment levels may temporarily increase the existing level of embeddedness in lower gradients of the Calispell Creek watershed outside of the project area. The increase is expected to be temporary.

Any effects of contaminants to the water quality of the larger watershed are expected to decrease under both action alternatives. Again, no cumulative effects are expected to the westslope cutthroat trout population in upper Tenmile Creek under implementation of either action alternative as other activities within the larger watershed are located downstream of this isolated cutthroat population. There is also "no effect" to any other westslope cutthroat trout

subpopulation in the larger Calispell watershed since this subspecies is not known within the project area other than in upper Tenmile Creek. Upper North Fork Calispell, East Smalle and Graham creeks, where other westslope cutthroat trout are found in the larger watershed, are not located directly downstream of project area and are therefore unaffected by the project or other areas of ongoing or proposed disturbances.

#### **Cumulative effects for interior redband trout**

Logging, road construction and reconstruction and housing development are expected to continue on private lands in the Calispell Creek watershed. The implementation of the no action alternative will allow soil movement and other materials into the streams to continue from use of the ski facilities, road systems and ski run/trail crossings in riparian areas. Sediment introduction and contaminants from these tributaries most likely incrementally degrades habitat in the larger Calispell Creek watershed. Alternatives B and C propose some removal of vegetation within the RHCAS through the construction of new ski trail crossings. These activities, under these action alternatives, propose a limited amount of disturbance in streams within the project area that otherwise are in a fairly functional state providing bank stabilization and overhead shade among other functions. Any significant increase in sediment levels may temporarily increase the existing level of embeddedness in lower gradients of the Calispell Creek watershed outside of the project area. The increase is expected to be temporary. Any effects of contaminants to the water quality of the larger watershed are expected to decrease under both action alternatives. However, since pure interior redband trout are not known to inhabit the project area nor the larger watershed, there is “no effect” cumulatively from implementation of any action alternative to this subspecies or its habitat.

#### **3.3.2.6 Conclusions**

Alternative A would maintain existing conditions (i.e., chlorinator and other facilities in the RHCA of Little Calispell Creek) and, consequently, would not comply with the Forest Plan and INFISH Riparian Management Objectives. Currently, there are 13 acres of disturbance in the RHCA of in the analysis area (**Table 3-5**).

Alternative B would increase disturbance in RHCAs to 16 acres as a result of expansion of facilities and ski runs. This alternative would not comply with INFISH and the Forest Plan because it would allow activities and facilities within the RHCA of Little Calispell Creek to continue to have an adverse effect on water quality and fish and fish habitat downstream.

Alternative C would result in an increase in disturbance in RHCAs of 1 acre, increasing disturbance in RHCAs to 14 acres as a result of expansion of facilities and ski runs. (**Table 3-5**). This alternative, however, would eliminate almost all of the snow piling, remove potentially polluting facilities and rehabilitate 2 acres within the RHCA of Little Calispell Creek. The overall effect on water quality and fish and fish habitat downstream should be much less than under the present level of operation of the ski area.

The proposed action, together with existing and future housing construction and continued logging and road building on private, state and federal timberlands are not anticipated to cumulatively adversely affect fish and other aquatic resources.

### **3.3.3 Vegetation: Affected Environment**

#### **3.3.3.1 Regulatory Framework**

The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA P.L. 93-378, 88 Stat. 475) and National Forest Management Act of 1976 (NFMA 36 CFR 219) provide the broad legislative background for forest vegetation management. The Colville Forest Plan (USDA Forest Service 1988a) provides local direction for forest vegetation management activities.

Executive Order 13112 (Clinton 1999) on invasive species directs federal agencies to prevent introduction of invasive species; provide for their control; and minimize economic, ecological, and human-health impacts. Under this executive order, federal agencies cannot authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species, unless all reasonable measures to minimize risk of harm have been analyzed and considered.

#### **3.3.3.2 Area of Analysis**

The area of analysis for direct and indirect effects is MA 3C and the adjacent private lands in Section 7. Also included is the proposed Nordic trail in the NW¼ of Section 6 and the SE¼ of Section 36, both adjacent to MA 3C. The cumulative effects area is the area encompassed in the Chewelah Lynx Analysis Unit (see **Figure 3-4**).

#### **3.3.3.3 Methods**

Vegetation field studies were conducted in the summers of 2001 and 2002 by Land & Water biologists to survey habitats for sensitive species, identify areas of old growth, identify habitat features, identify noxious weed populations and assess the seral ecology of plant communities (Dutton and Elliott 2000 and 2002). Published and unpublished reports, NEPA documents, and biological assessments/evaluations for projects on the Colville National Forest were obtained and reviewed (Williams et al. 1995). Meetings were held with Forest Service resource specialists to identify issues and determine required depth of study for the vegetation resource. Geographic Information System (GIS) databases for vegetation (e.g., old growth, vegetation type, and structural stage) were obtained from the Forest Service and evaluated. Aerial photographs were interpreted to determine habitat features.

#### **3.3.3.4 Existing Conditions**

Vegetation in the analysis area is composed of the Douglas-fir/Grand Fir Zone, Western Hemlock/Cedar Zone, and Subalpine Fir Zone (Williams et al. 1995). The Subalpine Fir Zone occurs at higher elevation ridges and upper north slopes, whereas the Douglas-fir/Grand Fir Zone occurs on slopes of intermediate elevation. The Western Hemlock/Cedar Zone occupies the lowest elevations of the analysis area, usually along drainages and other moist sites.

The dominant tree species on ridges and slopes of the existing ski area and adjacent expansion area are Douglas-fir, Engelmann spruce, western larch, western white pine, grand fir and subalpine fir. The highest density of subalpine fir is on the upper north slopes and ridges. Large areas of even-age stands of subalpine fir, western larch, and Douglas-fir exist due to fires in the early 1900s (USDA Forest Service 2000d). Stand ages typically are 70-95 years old with small patches (less than two acres) of trees 150-250 years old. Common shrubs include huckleberry, grouse whortleberry, ninebark, alder, and buffaloberry.

Several narrow, perennial streams drain the area (**Figure 3-1**). These small drainages are forested with large-diameter western red cedar and western hemlock communities with large amounts of downed logs and other woody debris. Because these sites are moist, they have burned less frequently and with less intensity than stands on upper slopes and ridges.

Vegetation on the existing ski area has been extensively modified by development of ski runs and associated facilities. Forested plant communities along drainages and between ski runs alternate with irregular, narrow clearings created for ski runs and lifts.

Much of the private land in Section 7 was clearcut logged within the last 10 years; consequently, vegetation is dominated by a dense stand of shrubs, tree seedlings and saplings. This early seral community has a large shrub component of alder and huckleberry. Approximately 200 acres of upper slope in the ski area have been “gladed” (i.e., trees have been thinned), to allow skiers to traverse these slopes.

Non-forested areas, mostly ski runs, are vegetated primarily by grasses, sedges, other herbaceous species, tree seedlings and shrubs. Most of the grasses on the ski runs are introduced agronomic species (e.g., smooth brome, timothy, orchard grass, and perennial ryegrass) that were seeded by helicopter in 1973 (USDA Forest Service 2000d).

### **Noxious Weeds and Unwanted Vegetation**

Sitka alder on ski runs is a management problem that is controlled by hand cutting and mechanical methods. Like noxious weeds, the density of alder is reduced through maintenance of a dense cover of seeded grasses. Young conifers are also a problem on cleared ski runs, and are controlled by handcutting.

Noxious weeds on the ski area are goatweed (St. Johnswort), common tansy, spotted knapweed, meadow hawkweed and Canada thistle. Treatments within the ski area are included in the Colville National Forest Environmental Assessment for Integrated Noxious Weed Treatment (1998). Weeds have been controlled by grass seeding, fertilization, mowing and herbicides.

The proposed project area is designated in the Colville Forest Plan as MA 3C. The visual emphasis of this management area is on “partial retention”, which is compatible with uneven-aged silvicultural treatments in visible areas and even-aged treatments in areas of low visibility.

### **Livestock Grazing**

Under MA 3C, the Forest Plan states, “The area will not be available for commercial livestock grazing unless vegetative control measures are needed.” (Forest Plan pg. 4-86). However, the area designated MA-3C continues to be a part of the Calispell Creek C&H Grazing Allotment. This allotment is about 37,000 acres and permits 87 animal unit months of grazing. Livestock grazing has occurred in the permit area in the past, and the Resort has complained to the Forest Service. The Resort was provided with fencing materials to keep livestock away from the Main Lodge area. In addition, cattle guards were installed on



**Figure 3-3: Example of the vegetation cover found on ski runs at 49 Degrees North**

**Figure 3-4: Map of the Chewelah Lynx Analysis Unit (LAU)**

Flowery Trail Road and the grazing permittee was encouraged to keep livestock out of the ski area.

Within the past 3 or 4 years, livestock have not utilized the ski area.

### Old Growth

Due to past fires and logging, most forest communities within the existing ski area do not meet the criteria for old growth as defined for Region 6. This definition of old growth includes 10 trees per acre, greater than 21 inches in diameter at breast height, 150 years old or older, with stands 10 acres or larger (Green et al. 1992). Small patches in the analysis area, less than 10 acres in size and less than 800 feet wide, consist of old (some trees more than 500 years old) large-diameter subalpine fir, Douglas-fir, and western larch on upper slopes and western red cedar along lower drainages.

When the Forest Plan was prepared, the Forest identified a 114-acre stand of old growth in the east basin area (**Figures 2-1 and 2-2**). This stand of western hemlock, subalpine fir and other conifers extends from near the ridge top down to the boundary with private land<sup>3</sup>. This old growth stand is currently multi-stratum with large trees and has more than 20 trees per acre that are more than 21 inches in diameter – primarily western hemlock and western redcedar. The large hemlock and cedar are quite vulnerable to weather related disturbance, i.e., wind or snow events.

### Sensitive Plant Species

No federally listed Threatened or Endangered plant species, or species proposed for federal listing, are known to occur in this analysis area (US FWS 1999 and 2000).

The Colville National Forest has 45 species of sensitive plants that are either documented or suspected to occur on the Forest. A query of the Washington Natural Heritage Program database did not identify sensitive species on or near the analysis area (WNHP 2001). A pre-field review showed that no sensitive species are documented within this project area; however, 6 are suspected based on habitats. Intuitive controlled sensitive plant surveys were conducted in the summer and fall of 2000 and the summer of 2002 by Land & Water biologists (Dutton and Elliot, 2000 and 2002). No sensitive plants were found. The following table lists the suspected sensitive plants in this project area.

**Table 3-9: Sensitive Plants That May Occur in the Project Area**

Scientific Name	Habitat
<i>Botrychium ascendens</i>	Dry meadows between about 3,000 – 3,400 foot elevation.
<i>Botrychium crenulatum</i>	Western redcedar-western hemlock forests, streambanks and floodplains, between about 2,000 - 4,600 foot elevation.
<i>Botrychium hesperium</i>	Dry to moist meadows, between about 3,000 – 3,300 foot elevation.
<i>Botrychium lineare</i>	Western redcedar-western hemlock forests, streambanks and floodplains, between about 2,000 - 4,000 foot elevation.
<i>Botrychium paradoxum</i>	Dry meadows, perennial and intermittent streams, between about 2,500 – 3,600 foot elevation.
<i>Botrychium pendunculolum</i>	Dry to moist meadows, perennial streams, between about 2,500 – 3,300 foot elevation.

<sup>3</sup> The private land adjoining the old-growth stand on NFS Land has been clearcut and is dominated by shrubs, seedlings, and herbaceous species.

### **3.3.4 Vegetation: Environmental Consequences**

#### **3.3.4.1 Alternative A – The No Action Alternative**

The No Action Alternative would continue the existing vegetation management on the ski area. Maintenance of vegetation on ski runs to reduce densities of invading woody plants and noxious weeds would continue. Forest communities within the study area would continue to age and become susceptible to insects, disease, and fire.

Selection of the no action alternative is not expected to show immediate changes in the old growth stand. Over the long-term (up to 30 years), it is expected that the old growth stand will begin the stand initiation phase of development. During the stand initiation phase it is likely that the largest most defective trees will be the first to fall, thus potentially affecting the stand at a pace equaling that of the action alternatives, though in a more random manner. Once the large trees begin to fall, openings will regenerate with hemlock, cedar and grand fir.

#### **3.3.4.2 Effects Common to Alternatives B and C**

Both Action Alternatives would require clearing for ski runs and thinning for improved tree skiing off groomed ski runs. Clearing and thinning for new ski runs would increase the potential for noxious weeds to invade areas currently free from noxious weeds. Clearing and thinning for new ski runs would remove the forest overstory and disrupt understory vegetation and soils, rendering cleared areas susceptible to invasion by noxious weeds and other invasive species (e.g., agronomic grass species and alder). Implementation of BMPs, including seeding and erosion control would minimize impacts resulting from vegetation removal. Noxious weed management, currently ongoing at the ski area, would continue in the expansion area. Chewelah Basin Ski Corp. would utilize the Colville National Forest Weed Prevention Guidelines (USDA Forest Service, 1999a), the Colville National Forest Seeding and Planting Guide (USDA Forest Service, 1999b), and the USDA Forest Service Guide to Noxious Weed Prevention Practices (USDA Forest Service, 2001).

Clearing of new ski runs could pose a risk to individual sensitive plants or small populations; however, site surveys did not find sensitive plants in the areas proposed for disturbance. The greatest risk to sensitive plants would be clearing for cross-country trails in western red cedar communities. These moist forests with late seral components have the highest probability of harboring sensitive plants. Overall, the project may affect individual plants, but is not likely to cause a trend to federal listing or loss of viability. A risk assessment of the potential effects for sensitive plants was conducted according to the procedures in Forest Service Manual 2672.42 (R-6 Supp. 2600-90-5, 8/90). With the mitigation measure included, the likelihood of adverse effects is “Low” and the consequences of adverse effects is “Low”. The resulting risk assessment indicates the project may proceed as planned.

#### **3.3.4.3 Effects of Alternative B**

Alternative B would result in removal of overstory forest canopy for construction of downhill (310 acres) and Nordic trails (53 acres). Of the 310 acres cleared, new downhill ski runs would remove 60 acres of old-growth (**Figure 2-1**). An additional 40 acres of the old-growth would be lightly thinned by removing 75% of trees under 7 inches in diameter and 10% of woody debris. Thinning of old growth would leave all of the larger trees (21 inches in diameter or larger) and snags that would not pose a safety risk.

With this alternative, more than half of the old-growth stand (60 acres of 114 acres) would be removed and the remainder substantially altered by tree and woody debris removal. On an additional 40 acres, removal of smaller trees and about 10% of the woody debris would alter the pristine character of old growth but would not totally eliminate the dominant visual aspect associated with old growth (i.e., the presence of large mature and decadent trees).

Due to the large number of openings, a large portion of the old growth stand would be exposed to the effects associated with stand edge, i.e., wind throw, broken trees, and solar desiccation of shade-tolerant species. In addition, a large portion of the biggest trees would have to be removed as hazards. Alternative B, if selected, would in all likelihood eliminate the old growth stand both with fragmentation and resulting stand damage from wind. Alternative B would start the stand initiation phase.

In addition to old growth, thinning of forest stands (230 acres) not meeting old-growth criteria would enhance skiing among the trees. Thinning would result in open stands of larger trees with 50% less large woody debris. Thinning and removal of woody debris would reduce levels of insects and disease, which are currently present in the analysis area. Thinning would also reduce wild fire risk.

Alternative B would have a higher potential than Alternative C to affect sensitive plants because more acres of vegetation would be removed or thinned. Alternative B would have more potential than Alternative C to increase acres colonized by noxious weeds as a result of disruption of vegetation in the expansion area.

#### **3.3.4.4 Effects of Alternative C**

Alternative C would clear about 257 acres of forest. About 27 acres would be cleared for Nordic trails, and about 230 acres would be cleared for ski runs. Alternative C would also thin an additional 310 acres for gladed skiing.

Of the 230 acres of forest removed for new ski runs, 5 of these acres would be in the 114-acre old growth stand in the East Basin (**Figure 2-2**). This alternative would have 150-foot areas thinned on each side of the groomed run (11 acres) to remove trees smaller than 17 inches in diameter and large woody debris. The remaining 100 acres of old growth would be lightly thinned and have about 75% of trees smaller than 7 inches in diameter and about 10% of large woody debris removed. Like Alternative B, the pristine character of old growth would be altered with this alternative, but features such as the composition of large trees would not be reduced on 100 acres of the 114-acre old-growth stand.

Alternative C would expose much less stand edge, and remove fewer hazard trees than Alternative B. The large tree component would be maintained on about 109 acres with this alternative. Other than the 5 acres in cleared runs, and the 11 acres with trees less than 17 inches diameter removed, the remaining portion of the old growth stand should proceed toward the stand initiation phase of development in a manner very similar to Alternative A.

About 210 acres of forest that is not old growth would be thinned to allow skiing among the trees. Thinning of these stands would remove most trees under 7 inches in diameter, some larger trees, and 50% of woody debris.



Alternative C would improve riparian vegetation conditions on 2 acres immediately adjacent to Little Calispell Creek. One acre along the creek would be fenced and replanted with riparian shrubs. Traffic would be reduced on the remaining acre to promote increased plant growth.

#### **3.3.4.5 Cumulative Effects**

Other projects in the cumulative effects area that could affect vegetation resources in the future and are in progress or planning include:

- Flowery Trail Road reconstruction,
- Chewelah Peak Learning Center,
- Additional homes on Flowery Trail Community subdivision leased lands, and
- New homes or commercial development on private lands in Section 7.

Removal and thinning of forest stands for ski runs and other project facilities (e.g., parking, chair lift, water pipelines, and ice rink) would contribute cumulatively to removal and thinning of forest that would take place with development of the other proposed or reasonably-foreseeable projects listed above.

Removal of forest stands through thinning, prescribed fire, and road building would increase the spread of noxious weeds to areas that currently do not have noxious weeds or have low densities of noxious weeds.

Regional forest management activities that involve vegetation removal may also adversely affect Forest Service sensitive plants. Most management activities that involve mechanical removal of vegetation have the potential to directly kill some sensitive plants or degrade habitat. There should be no negative cumulative effects from activities proposed in any of the alternatives since there are no known sensitive plants in areas of proposed activities. The determination is that this project is "Not likely to cause a trend toward federal listing or loss of viability" based on known occurrences of federal lands alone. There are no regulations to protect sensitive plants on private lands.

Environmental analyses for the Flowery Trail Road reconstruction and the Chewelah Peak Learning Center did not identify potential environmental effects on vegetation resources beyond short-term construction activities (Washington Department of Transportation 1996, Wyatt Engineering 2001). The cumulative effects of these two projects in combination with the proposed 49 Degrees North Action Alternatives would have a minor effect on vegetation resources. Potential impacts from additional homes at the Flowery Trail Community subdivision would be distributed over the next 10-20 years and regulated by planning and health authorities. New homes or commercial development on private lands in Section 7 would also be reviewed by planning and health authorities.

#### **3.3.4.6 Conclusions**

Both Action Alternatives would require removal of the forest overstory for ski runs. Alternative B would remove 310 acres of forest, of which 60 acres would come from old growth. Alternative C would remove 230 acres of forest, of which 5 acres would come from old growth. Removal of forest vegetation would increase the potential for noxious weeds to proliferate and reduce amounts habitat available for sensitive plants, although no sensitive plants have been identified in the analysis area. Both Action Alternatives would meet vegetation requirements of the Forest Plan.

### **3.3.5 Wildlife: Affected Environment**

#### **3.3.5.1 Regulatory Framework**

The regulatory framework providing direction for the protection and management of wildlife habitat comes from the following principle sources:

- Endangered Species Act of 1973 (50 CFR 17 as amended),
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (Clinton 2001)
- National Forest Management Act of 1976 (36 CFR 219),
- Colville Forest Plan (USDA Forest Service, 1988a), and the

Section 7 of the Endangered Species Act directs federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of threatened or endangered species or result in destruction or adverse modification of their critical habitat.

Executive Order 13186 directs executive departments and agencies to take actions to further implement the Migratory Bird Treaty Act. Section 3 of the Executive Order states that, "Each Federal agency taking actions that have, or are likely to have a measurable negative effect on migratory bird populations is directed to implement, within two years, a Memorandum of Understanding (MOU) with Fish and Wildlife Service that shall promote the conservation of migratory bird populations" and each agency shall "ensure that the environmental analysis of federal actions required by NEPA or other established environmental review processes evaluate effects of actions and agency plans on migratory birds, with emphasis on species of concern". The analysis of effects to wildlife in this EIS includes analysis of effects of the proposed activities on neotropical (migratory birds).

The National Forest Management Act (NFMA) (36 CFR 219) provides for balanced consideration of all resources. It requires the Forest Service to plan for diversity of plant and animal communities. Under its regulations, the Forest Service is to maintain viable populations of existing and desired species, and to maintain and improve habitat for management indicator species.

The Forest Plan (USDA Forest Service 1988a), in compliance with the NFMA, establishes Forest-wide management direction, goals, objectives, standards, and guidelines for management and protection of wildlife habitat and species, old-growth habitat, Management Indicator Species, Sensitive Species, and Threatened and Endangered Species.

It is the intent of this analysis that the information base reflects changes in habitat conditions (such as stand structure), resulting from past, present and reasonably foreseeable actions.

#### **3.3.5.2 Methods**

The USDA Forest Service Manual (USDA Forest Service 1997, 2670.32, page 5) requires a documented review or Biological Assessment of Forest Service programs or activities in sufficient detail to determine how an action may affect Threatened, Endangered, Proposed, or Sensitive species. Consultation with U.S. Fish and Wildlife Service is mandatory if the Biological

Assessment concludes that a proposed action may have an effect on federally listed species or habitat.

For each species analyzed in this chapter, the cumulative effects area were determined based on the species' or guilds' relative home range size in relation to its available habitat, topographic features (watershed boundaries) which related to how species move and utilize their home range, and boundaries that represented the furthest extent of effects.

The analysis was done at different levels of intensity (for example, from coarse filter to medium filter to fine filter) as appropriate to address the issues and concerns. Some elements of wildlife habitat require detailed analysis to determine potential effects on wildlife species. Other elements may either not be impacted, impacted at a level which does not influence use/occurrence or the decision to be made, or can be adequately addressed through design of the project. These elements do not require in-depth analysis. The level of analysis was dependent on a number of variables including: existing conditions, cause and effect relationships, magnitude or intensity of effects, contrast in effects between alternatives, risks to resources, and information necessary for an informed decision. The analysis was commensurate with the importance of the impact (40 CFR 1502.15), the risk associated with the project, the species involved, and the level of knowledge already in hand.

The wildlife analysis for the proposed project considered direct, indirect, and cumulative effects. Cumulative effects are defined as impacts to the environment that result from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time. The relative scope of the cumulative effects analysis has both a temporal and a spatial component.

The U.S. Fish and Wildlife Service provided a site-specific list of Threatened and Endangered species that may occur in the project area. The 49 Degrees North analysis area is not a recovery area for any threatened or endangered species. The Fish and Wildlife Service identified 1 endangered species (woodland caribou) and 4 threatened species (gray wolf, grizzly bear, bald eagle, and Canada lynx) that could exist on the analysis area. These species are addressed in this EIS.

### **3.3.5.3 Area of Analysis**

The area of analysis for direct and indirect effects is MA 3C and the adjacent private lands in Section 7. Also included is the proposed Nordic trail in the NW¼ of Section 6 and the SE¼ of Section 36, both adjacent to MA 3C. The cumulative effects area is all land included in the Chewelah Lynx Analysis Unit (**Figure 3-4**). A Lynx Analysis Unit (LAU) is a land area with suitable lynx habitat to support a female lynx with young.

### **3.3.5.4 Existing Conditions**

The 49 Degrees North Mountain Resort has been the dominant factor affecting wildlife habitat in the analysis area for approximately 30 years. Cleared forest for ski runs, lifts, parking lots and other facilities created openings, increased human presence (mainly in winter) and increased access for hunters, hikers, berry pickers and others. The general character of habitat in the developed portion of the ski area is irregular, narrow clearings (ski runs and chairlift corridors)

alternating with conifer forest of varying stages of ecological succession and structural composition.

Wildlife habitat in the proposed expansion area is mostly on north-facing slopes and predominantly consists of mixed conifer stands of Douglas-fir, lodgepole pine, western larch, subalpine fir, and Engelmann spruce. Several narrow, perennial streams drain the area (**Figure 3-1**). These small drainages are forested with large-diameter western red cedar and western hemlock communities with large amounts of downed logs and other woody debris. Several rock outcrops are present on upper slopes in the East Basin.

Private land on the upper slopes of the East Basin has been clearcut logged within the last 10 years; consequently, the vegetation is dominated by a dense stand of shrubs and tree seedlings and saplings. This early seral community has a large shrub component of alder and huckleberry. Substantial areas of upper slope in the ski area have been “gladed” (i.e., trees have been thinned), to allow skiers to traverse these slopes. Non-forested areas, mostly ski runs, are vegetated primarily by grasses, sedges, other herbaceous species, tree seedlings and shrubs.

Several small patches of late-seral forest in the analysis area partially meet the definitions of “old-growth” consisting of old (500-600 years) large-diameter subalpine fir and western larch on upper slopes and western red cedar along lower drainages. With the exception of one 114-acre stand (**Figure 2-1**) in the proposed expansion area, these small patches are less than 10 acres or in strips less than 800 feet wide and, therefore, do not meet the criteria to be mapped as old growth.

The 49 Degrees North ski area is bounded on the west by the Cottonwood Divide (**Figure 2-2**). Habitat to the south of the ski area transitions, after about 20 miles, from forest communities to valley grassland and agricultural land. The Cottonwood Divide provides a linkage or movement corridor for wildlife species that often travel along ridgelines (e.g., forest carnivores and elk) to access suitable habitats to the north and south.

Federal land adjacent to the analysis area has been managed by the Forest Service under multiple use directives that include timber harvest, recreation (e.g., hunting, fishing, snowmobiling, hiking, and skiing), and livestock grazing. Private land, mostly industrial timberlands, is interspersed with land managed by the Colville National Forest. Most private land has been intensively managed for the production of wood products.

Timber harvest and associated roads have had the greatest effect on wildlife habitat. In general, roads and clearcuts displace species that are sensitive to vehicular traffic and have ecological and life history requirements not compatible with early seral plant communities.

The Washington Department of Fish and Wildlife identifies wildlife habitats that receive management priority because they have unique or significant values to a diverse assemblage of species. Priority habitats identified for the project area include: old growth/mature forests, riparian areas, and snags and logs. The analysis area has 114 acres of old-growth forest (**Figure 2-1**), and riparian areas (i.e., RHCAs) exist along perennial and ephemeral streams (**Figure 3-1**). Snags and logs are present in patches of vegetation within the ski area that have been unaffected by glading or construction of ski runs.

### 3.3.5.5 Wildlife Addressed in this EIS

Categories of wildlife addressed in this EIS are: wildlife with habitats and populations at risk (Threatened, Endangered, and Sensitive); Management Indicator Species, and neotropical migrants. Habitat conditions such as fragmentation, interior forest, old growth, corridors, and biological diversity are also discussed.

#### **Endangered and Threatened Species**

A Biological Assessment (BA) was prepared for the proposed expansion project, as specified in the Endangered Species Act of 1973 (50 CFR 17 as amended) and the National Forest Management Act (36 CFR 219), respectively. Provisions of the Endangered Species Act direct federal agencies to seek to conserve threatened and endangered species and to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of threatened or endangered species, or result in adverse modification of their critical habitats.

The BA for the proposed ski area expansion addresses possible effects to the endangered<sup>4</sup> woodland caribou, and to the threatened<sup>5</sup> gray wolf, bald eagle, grizzly bear and Canada lynx.

#### **Woodland Caribou (*Rangifer tarandus*)**

##### **Status: Federally Endangered**

The 49 Degrees North project area does not contain suitable woodland caribou habitat. The project area is located approximately 45-50 air miles from the woodland caribou recovery area.

#### **Bald Eagle (*Haliaeetus leucocephalus*)**

##### **Status: Federally Threatened – proposed for de-listing in 1999**

The bald eagle is a raptor that preys largely upon fish and is most often associated with larger rivers or lakes. Primary habitat components include clean water with abundant fish populations and large, perch trees and roost sites located nearby. In winter and during migration, bald eagles may scavenge in agricultural valleys and wetlands. During these times, eagles may congregate in winter roost sites found within suitable timber stands (usually mature and/or old-growth timber) located close to an available forage base.

Maintenance of forests with suitable nest, perch, and roost trees and maintenance of adequate food supplies are critical to sustaining bald eagle populations over time.

The Forest Plan directs that active bald eagle nests and other essential eagle habitats will be managed according to the Bald Eagle Management Guidelines for Oregon and Washington (USDI - Fish and Wildlife Service 1981) and the Pacific States Bald Eagle Recovery Plan (USDI - Fish and Wildlife Service 1986). Essential habitat components for bald eagles, as identified in the Recovery Plan include:

- Nesting habitat - Bald Eagle nests are usually located in uneven-aged stands with old-growth components and near water with adequate food supplies. Most nests are in large coniferous trees, but cottonwoods are also used in some areas. The presence of large perch trees within nesting territories is also considered important.
- Winter Habitat - Winter roost sites are usually large, older trees with open branching patterns in the upper half, located near feeding areas. Communal winter roosts are

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<sup>4</sup> Endangered species are those in danger of extinction throughout all or a significant portion of its range.

<sup>5</sup> Threatened species are those which are likely to become endangered within the foreseeable future.

usually located in sheltered timber stands that provide more favorable microclimates (protection from inclement weather) for energy conservation than surrounding areas.

- Adequate forage sources - Fish, waterfowl, small mammals and various types of carrion are the most common food items of bald eagles in the Pacific recovery area.

There are currently no known bald eagle nest sites within the 49 Degrees North project Area. The nearest known bald eagle nests are located along the Pend Oreille River which is about 15 miles east of the project area. There are no winter feeding or concentration sites within the project area. The closest winter feeding areas are the Colville River valley, 8 miles west, and the Pend Oreille River, where there are large trees for nesting and perching and accessible prey.

### **Gray Wolf (*Canis Lupus*)**

#### **Status: Federally Threatened**

The Northern Rocky Mountain Wolf Recovery Plan (USDI Fish and Wildlife Service 1987) identifies three areas for wolf recovery: Yellowstone, northwest Montana, and central Idaho. The State of Washington does not contain any wolf recovery areas although, historically, part of the wolf's natural range included the state. Wolves found outside of recovery areas receive federal protection under the Endangered Species Act, even though the areas they inhabit are not managed to provide wolf habitat or encourage use.

Wolf sightings are occasionally reported from throughout the Colville National Forest. Records of wolf sightings on the Colville National Forest date from 1914, and continue to the present. Most reported sightings are of single wolves. Attempts to survey for wolves (howling surveys) have been conducted on the Colville National Forest in the past, but the results of these surveys have been inconclusive. At present, there are no known wolf dens or rendezvous sites on the Colville National Forest, and there is little evidence suggesting any wolf pack activity or breeding. For purposes of this analysis, it is assumed that single, transient wolves moving within large land areas could potentially use any of the National Forest System lands within the project area. Specific surveys to determine presence of wolves were not considered necessary for this analysis.

Key components of wolf habitat are: sufficient year-round prey base of deer, elk, moose, and alternative prey; suitable and somewhat secluded denning and rendezvous sites; and sufficient space with minimum exposure to humans (USDI Fish and Wildlife Service 1987).

Ungulate prey within the analysis and cumulative effects area include moose, whitetail deer, mule deer and moose. The ski area is located in ungulate summer range but there is no winter range because of large accumulations of snow that remain on the ground until late spring.

There are no wolf packs known on the Colville National Forest and consequently, no denning and rendezvous sites. High levels of human activity in and around the analysis area (i.e., ski area, homes, roads) reduce the potential habitat quality for wolves.

### **Grizzly Bear (*Ursus arctos horribilis*)**

#### **Status: Federally Threatened**

Historically, grizzly bears ranged over lands now managed as the Colville National Forest (Klock 1998). Grizzly bear ecosystems, recovery areas, and management situations have been identified. On the Colville National Forest, the only recovery area is the Selkirk Mountain Grizzly Bear Recovery Area, east side of the Pend Oreille River about 30 air miles from the project

area. Grizzly bears are protected outside of recovery areas, but their use of areas outside of recovery areas is not encouraged.

Grizzly bear habitat use is influenced by the degree of isolation from humans, food availability, and potential denning sites. In general, grizzly bears use low-elevation meadow and riparian areas in spring and early summer and move to higher elevations (usually above 3,000 feet elevation) when snow melts and vegetation is actively growing. In fall, bears feed heavily on huckleberries, serviceberries, mountain ash, and other fruits. Grizzly bears den at elevations above 6,000 feet elevation, often on north-facing slopes, where snow accumulates and remains until late spring.

There have been confirmed sightings of grizzly bears on the Colville National Forest and on the ski area. In August 2002, a two-year-old, radio-collared male grizzly was detected on and adjacent to the ski area (Loggers and Eminger 2002). This young bear migrated from northeastern Washington and moved through the ski area and adjacent forested habitat as part of a wide-ranging movement pattern. This bear was subsequently shot and killed in Idaho sometime in early November of 2002 (McGowan 2002).

High levels of human use, residences, and road tend to displace grizzly bears away from the ski area although suitable late summer and fall foraging habitat is present. Early successional shrub communities following logging and ski run clearing provide berries, grass, and other favored grizzly bear food from mid-summer to late-fall. North-facing slopes of the ski area, reaching elevations of 5,800 feet may have some features for denning sites, but high levels of human activity in winter preclude use of analysis area for denning.

### **Canada Lynx (*Lynx canadensis*)**

#### **Status: Federally Threatened**

Lynx tend to be solitary animals that occupy the boreal, sub-boreal, and western montane forests of North America that have cold, snowy winters and provide a prey base of snowshoe hare (*Lepus americanus*). The best available information indicates that overall habitat suitability of any area for lynx is overwhelmingly tied to the availability of snowshoe hare, their principle prey species, especially during the winter. In Washington, lynx use a mosaic of high elevation forest types, from early successional to mature coniferous and deciduous stands, primarily in subalpine fir habitat types where lodgepole pine is a major seral species, generally between 4,100 – 6,600 feet. It is suggested that this is the elevation at which the lynx becomes a more efficient predator than the bobcat (*Lynx rufus*) or coyote (*Canis latrans*) because the lynx's longer legs and larger feet enable it to traverse deep snow more efficiently. Moist grand fir and moist Douglas-fir habitat types, where they are intermixed with subalpine fir habitat types, also provide lynx habitat. In the Selkirk Mountains, lynx habitat also includes the cedar/hemlock habitat types. In winter, lynx do not appear to hunt in openings, where lack of above-snow cover limits habitat for snowshoe hares. Generally, lynx prefer to forage in forest stands that are from 10 to 30 years old, with a high density of young conifers or branches that protrude above the snow. Older forests with a substantial understory of conifers or shrubs and young trees that provide dense cover that touches the snow in winter also provide good-quality lynx foraging habitat. Large open areas, whether human-caused or natural, are usually avoided by lynx. Lynx seem to prefer to move through continuous forest.

In April 1993, the Washington Department of Fish and Wildlife released draft maps showing prime lynx habitat across the state. Within this primary lynx range, subdivisions called Lynx Analysis Units (LAUs) were identified to facilitate analysis of lynx habitat on a smaller scale.

LAUs do not depict actual lynx home ranges, they were delineated generally along watershed boundaries, and their size approximates the home range area used by an individual lynx. In November/December 1999, the LAUs located on the Colville National Forest were re-examined using new guidelines provided in the Lynx Conservation Assessment and Strategy. LAU boundaries were adjusted where necessary to remain consistent with the Lynx Conservation Assessment and Strategy guidelines. The 49 Degrees North Project Area is located within the Chewelah LAU. The Chewelah LAU contains 21,633 acres of land. Currently about 83% of this area (all land ownerships) is considered suitable lynx habitat.

In February 2000, the USDA Forest Service entered into agreement with the U.S. Fish and Wildlife Service to promote the conservation of the lynx and its habitat on federally managed lands by using "The Scientific Basis for Lynx Conservation" (Science Report) and the Lynx Conservation Assessment and Strategy (LCAS) together with locally specific information as appropriate, as the basis for these actions.

Lynx distribution in northeastern Washington has been monitored by the Washington Department of Fish and Wildlife through documentation of winter track sightings, trapping records, camera stations, hair snag inventories, volunteer observations, and incidental sightings. Lynx were documented in the 1990s on Colville National Forest within about 5 miles of the ski area and it is reasonable to expect that lynx still could potentially occur within the Chewelah LAU.

This area falls within the Northern Rocky Mountains Geographic Area. Lynx Conservation Assessment and Strategy standards and guidelines for lynx management and conservation apply only to federally managed lands within each LAU. While all conservation measures from the LCAS describe the desired conditions within the Chewelah LAU, some of the more applicable measures include:

- If more than 30% of lynx habitat within a LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of vegetation management activities by federal agencies (LCAS p. 77);
- Management actions shall not change more than 15% of lynx habitat within a LAU to an unsuitable condition within a 10-year period (LCAS p. 79);
- Maintain denning habitat in patches generally larger than 5 acres, on at least 10% of the area that is capable of producing stands [with denning characteristics] (LCAS p. 78);
- Limit public use on temporary roads constructed for timber sales. Design new roads, especially the entrance, for effective closure upon completion of sale activities (LCAS p. 83)

Analysis of lynx habitat generally focuses on the availability and interspersed of the following key habitat components within one or more Lynx Analysis Units.

#### Foraging habitat for lynx

Lynx prey mainly on snowshoe hare, and the well being of lynx populations seems to be correlated with snowshoe hare populations. Lynx also prey on ruffed grouse, red squirrels and other rodents, and infrequently, deer.

Snowshoe hare population densities reach their peak in young, dense, moist coniferous forests that provide cover, protection from predators, and browse during all seasons. After a stand matures, less light reaches the forest floor and shrubs and small trees become less dense. Mature stands provide less food and cover for hares and their populations decline. During times



of hare scarcity, lynx depend on alternate food sources, especially red squirrels. Populations of red squirrels are highest in mature, closed-canopy forests with large amounts of coarse woody debris and good cone production.

The value of foraging habitat varies based on stand age and structure and changes as stands undergo ecological succession. Some foraging habitat may support high densities of snowshoe hares, whereas other foraging habitat is unproductive hare habitat. With disturbance from logging or fire, young stands become established and develop through ecological succession into habitat for hares that may remain optimal for 20 or 30 years.

Habitat in the expansion area and LAU, as a whole (45 percent) is relatively unproductive, low-quality habitat. Low-quality foraging habitat does not have the appropriate vegetation structure and composition to provide productive habitat for snowshoe hares. Typically, lynx move through low-quality foraging habitat as they seek prey and denning cover, but do not utilize this habitat extensively.

Currently, about 83% of the Chewelah LAU (17,974 acres), including both private and federal land, is lynx habitat (**Table 3-10**). Of this total, 18.7% (4,040 acres) is optimum foraging habitat, 45% (9,803 acres) is low-quality foraging habitat, 19% (4,131 acres) is potential denning and foraging habitat, and 17% (3,659 acres) is unsuitable.

**Table 3-10: Existing Lynx Habitat in the Chewelah Lynx Analysis Unit**

Habitat Component	Acres
Denning	4,131
Optimum Foraging	4,040
Low-quality Foraging	9,803
Unsuitable	3,659
Total	21,633

#### Denning habitat for lynx

Limited data concerning habitats used by lynx for denning suggests that they use cool and cold habitats with a mature forest overstory and large amounts of down, large woody debris (e.g., logs and stumps) for denning (Loggers 2001 and 2002). Maternal denning habitat is usually limited throughout the range of lynx. Large amounts of large coarse woody debris provide escape and thermal cover for kittens. During the first few months of life, kittens are left alone while the female lynx hunts. Downed logs and overhead cover provide protection of kittens from owls, hawks, and other predators. This habitat structure must be available in lynx home range, because kittens continue to require protective cover when they are old enough to travel.

Currently, about 19% of the Chewelah LAU (4,131 acres) is denning habitat – about 9% is considered good quality habitat, and about 10% is marginal (Loggers 2001). Denning habitat is also considered foraging habitat; therefore the 83% of the LAU that is classified as foraging habitat also contains the 4,131 acres of denning habitat. There are areas of potential lynx denning habitat within the proposed expansion area (see map in project file). These areas include late seral stands of western red cedar at lower elevations and mixed conifer stands at higher elevations. Lynx denning habitat in the expansion area has large amounts of woody debris on the ground and nearly closed overstory canopies of mature trees. No denning or foraging by lynx has been documented on the ski area although suitable habitat is present (USDA Forest Service 2002c and winter tracking surveys by Land & Water Biologists, Dutton and Elliott 2000 and 2002).

#### Unsuitable habitat for lynx

Unsuitable habitat consists of open areas that at some time could support lynx habitat, but currently do not. These areas do not support above-snow vegetation or contain vegetation that is too widely spaced to provide connectivity habitat. In winter, lynx tend to either not use or to avoid these areas, and in winter these areas tend to hold few if any snowshoe hares.

According to criteria presented in the Canada Lynx Conservation Assessment and Strategy (Ruediger et al. 2000), each LAU must have no more than 30% unsuitable habitat. If a LAU has more than 30% unsuitable habitat, no further reductions in lynx habitat shall occur. Currently, the Chewelah LAU has 16.9% unsuitable habitat (**Table 3-10**).

#### Diurnal security habitat for lynx

In areas where there is extensive recreational development (e.g., large ski areas), human activities that could displace lynx usually are concentrated during daylight hours. Consequently, during periods of human activity, lynx are usually displaced from habitat near high levels of disturbance. To avoid periods of high human activity, lynx often seek nearby areas with dense vegetation and down woody material and little human activity to forage and rest. These adjacent areas of secure habitat are diurnal security areas that may allow lynx to remain near areas of disturbance and resume normal foraging activities at night when human use declines. Diurnal security habitat should be sufficiently large to provide effective sound and visual insulation from human activity and must be well distributed and in proximity to foraging areas.

Patches of timber that may have the potential to provide diurnal security habitat for lynx exist adjacent to the expansion area, over the ridge in the Quartzite watershed. An area just below the ridge top is identified as lynx denning habitat (see map in project file). Typically, denning habitat has habitat features that also provide diurnal security (e.g., large amounts of large woody debris and a mature forest overstory).

#### Connectivity habitat for lynx

Habitat that allows lynx to move within and between LAUs (i.e., connectivity habitat) also is important in evaluating lynx habitat. Lynx often travel along physical features of the landscape such as major ridges, saddles, and riparian areas. When covered with sufficient vegetation, these landscape features provide corridors or connectivity habitat for lynx moving within and between habitats, and for migrating animals.

Ridges to the west and south of the ski area are habitat corridors that link suitable habitats on and around the ski area. Although vegetation has already been altered by existing facilities at the ski area and roads, sufficient cover exists on Cottonwood Divide and connecting ridges to allow secure movement through and around the ski area for lynx and other wildlife. Future lynx movement along ridges extending east from Chewelah Peak might be inhibited by development of the ski area, especially in winter when there are numerous skiers and associated activities, but sufficient cover will remain so that this potential is not eliminated.

#### Human access and lynx

Though not limited to roadless areas, lynx may be affected by human access into their habitat, especially during winter and the denning season. The extent and magnitude of disturbance that affects lynx is not known, but lynx do not appear to avoid roads. Although lynx may not avoid roads, roads can negatively affect lynx by allowing human disturbance in denning habitat and increasing access for hunting and trapping. Lynx cannot be legally trapped or hunted, however, illegal trapping or hunting could occur. Plowing or packing snow on roads and trails might also

allow competing carnivores to more readily enter lynx habitat thus increasing competition for prey.

Currently, there are numerous roads and trails that allow access to the analysis area and surrounding habitat during both summer and winter (**Figures 1-1 and 1-2**). Groomed and packed snowmobile and Nordic trails surround the ski area. During summer, roads have vehicle traffic and winter if roads are not plowed they have snowmobile traffic. Flowery Trail Road, currently being upgraded to allow higher traffic speeds, bounds the ski area on the north and bisects the Chewelah LAU.

Road density on NFS Land in the Chewelah LAU is about 1.7 miles of road per square mile of road. The density of closed roads in the LAU is 2.1 miles per square mile of NFS Land. Open road density on private land within the LAU is estimated to be about 1.2 miles per square mile. Open road density on Forest Service and private land is below the maximum of 2.0 miles per square mile recommended for lynx management.

### **Sensitive Species**

Management of sensitive species is directed under the National Forest Management Act and requires that no proposed federal action on National Forests contribute to a trend toward federal listing or loss of viability to populations or species. Sensitive plant and animal species are identified by the Regional Forester for which population viability may be a concern as evidenced by notable current or predicted downward trends in population numbers or density or notable current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

Field reconnaissance study conducted by Land & Water biologists (Dutton and Elliott 2000 and 2002) and review of existing information (Klock 1998, Mosconi and Beuge 1994) indicate that habitat for the following sensitive species exists on or near the analysis area or cumulative effects area: Pacific fisher, wolverine, Townsend's big-eared bat, peregrine falcon, northern leopard frog, great gray owl. Suitable habitat for the following sensitive species does not appear to be present: common loon, and Greater sandhill crane.

#### **Pacific Fisher**

The Forest Plan provides no specific direction for managing fisher habitat. Fishers may be infrequently present in the analysis area and suitable habitats on adjacent lands. Winter track surveys conducted by Land & Water biologists (Dutton and Elliott 2000 and 2002) did not observe fisher tracks in the ski area. Optimal habitat for fishers appears to be mature, moist, coniferous forest and riparian areas that do not accumulate large amounts of snow. Fisher prefer mature forest with relatively closed canopies, but also use edges and wetlands.

Fishers tend to avoid nonforested areas such as clearcuts, meadows, and areas above timberline. Forested corridors are necessary for animals such as fisher to move across a managed forest landscape and make full use of available blocks of habitat. Small amounts of fisher habitat in the analysis area are present at lower elevations along drainages.

#### **Wolverine**

The Colville National Forest Plan provides no specific Standards and Guidelines or management direction applicable to wolverines other than direction the National Forest Management Act that specifies protection of sensitive species (Klock 1998). Wolverines are rare in northeastern Washington but are present in the Colville National Forest often associated

with boreal forests. Wolverines frequently use subalpine fir, lodgepole pine, and western larch stands. Large areas of medium and mature timber and associated cliffs, rock slides, wetlands, and meadows are important wolverine habitat. Wolverines infrequently use dense young timber, burned areas, clearcuts, and other open areas and often travel along timbered ridges and creek bottoms.

The wolverine is a solitary, mobile animal requiring large territories. Estimates of home range vary ranging to over 1,200 miles for males (Hornocker and Hash 1980). Females generally have smaller home ranges (150-200 square miles). Territory size and seasonal movements are influenced by food availability, breeding activity, and habitat conditions, including availability of denning sites and seclusion. Remote country with limited human activity appears essential to maintenance of viable wolverine populations (Hornocker and Hash 1980).

Wolverines are opportunistic scavengers, consuming a variety of plant and animal foods, with carrion (especially big-game animals) as a dominant component of their winter diet. Surplus food is often cached for later use. The Washington Department of Fish and Wildlife has a confirmed report of a wolverine near the project area (T32N, R4E, Sec. 1) on June 10, 1984 (Klock 1998).

#### **Townsend's Big-eared Bat**

There is no specific Forest Plan direction for managing this species. The Townsend's big-eared bat is widespread in the Northwest and occurs in a variety of habitats, from arid juniper and pine forests to high-elevation mixed conifer forests. This species roosts, breeds, and hibernates in caves, abandoned buildings, and mine adits and forages on flying insects. In summer, males and non-reproductive females usually roost in snags. This bat is extremely sensitive to human disturbance and will often abandon traditional roosts and nursery areas if disturbed. There are no caves or mines in the analysis area and the nearest record of this bat is about 5 miles northwest of the ski area (Klock 1998).

#### **Northern Leopard Frog**

The Forest Plan does not provide specific direction for managing habitat for this species. Northern leopard frogs require wetland habitats where there is an abundance of hiding cover. They eat insects, spiders, leeches, fish and other amphibians. In summer, they may be found away from water. In winter this frog hibernates at the bottoms of ponds and slow-moving streams. Threats to this species include predation and competition with introduced bullfrogs.

This species may occur in the vicinity of the proposed project, but little is known about their distribution locally. Some surveys have been conducted elsewhere in the Pend Oreille Valley and they have been found only along the Pend Oreille River. The analysis area does not contain suitable habitat; therefore, this species is not analyzed in detail.

#### **Great Gray Owl**

The Forest Plan does not include specific direction for managing great gray owl habitat. Great gray owls usually nest in mid- to late-successional forests, usually with a component of wet meadows, marshes, lakes or other openings that support a high prey base (e.g., small mammals). This owl often uses old hawk or raven stick nests or natural depressions on broken-topped snags or stumps for nest sites. Great gray owls forage for voles and other rodents in open grassy habitat. Great gray owl sightings are rare in northeastern Washington and there are no records of sightings on or near the project area.

### **Peregrine Falcon**

Peregrine falcons may be seasonal transients but there are no suitable nest sites (high cliffs) in the analysis area. The Pend Oreille River valley may provide hunting habitat for transient peregrine falcons when waterfowl congregates during migration. Peregrines may be seasonal migrants through the analysis area and could forage for prey (mostly corvids and passerine birds) in and around the ski area. The open nature of ski runs, with adjacent dense vegetation creates conditions suitable for peregrines to capture prey. Typically, peregrine falcons hunt in open areas where prey species cannot escape into dense cover. Peregrine falcons have not been documented in the analysis area and there is no suitable nesting habitat.

### **Forest Plan Requirements and Management Indicator Species**

The Forest Plan identifies “Management Indicator Species” (MIS) that are used to judge effects of land management activities on various habitats. Rather than attempt to manage all of the vertebrate species present on the Colville National Forest, analyzing MIS singles out a few representative species for conservation and management. Habitat managed for each indicator species would support other animals with similar habitat requirements. MIS were selected because they:

- Are endangered or threatened with extinction,
- Are believed to be sensitive to effects of forest management,
- Require specialized habitats that could be sensitive to forest management practices,
- Are species commonly hunted, fished, or trapped.

### **Old-growth Dependent Species (barred owl, pine marten, pileated woodpecker)**

Many wildlife species depend on habitat features found in mature and old-growth forest stands for all or some of their habitat needs. Old trees, accumulations of large, dead woody material, canopy characteristics, and species composition distinguish old-growth forests.

Due to the large number of species associated with mature and old-growth habitats, and the complexity of interrelationship of habitat needs, it is not possible to fully evaluate the effects of management actions on all dependent species. Therefore, the Colville National Forest has chosen three species (i.e., barred owl, pileated woodpecker, and pine marten) as Management Indicator Species to represent species dependent on mature and old-growth forest.

These MIS do not always utilize all old-growth habitats nor do they occur exclusively in old-growth habitats. However, their habitat requirements are related to stand structural components that are more likely to be found in old-growth habitats. Population densities of these species are generally higher in old growth than in younger stands.

Barred owls, pileated woodpeckers, and pine marten utilize mid-elevation Douglas-fir and cedar/hemlock habitat types, usually with overhead canopy closure of 60% to 100%. Pine martens also frequent subalpine fir/Engelmann spruce stands. Northern three-toed woodpeckers require mature forests of subalpine fir, Engelmann spruce, and lodgepole pine for reproduction.

There are 114 acres of old-growth habitat in the analysis area and an additional 235 acres of late seral forest communities in a contiguous pine marten core area (PM #62). These two areas make up a 349-acre patch of habitat potentially suitable for pine marten (**Figure 2-2**). Because of its relatively high elevation, and high levels of human activity associated with the existing ski area, this 349-acre, old-growth and late-seral forest stand is marginal habitat for pileated woodpecker and barred owl.

Availability of food in winter may act as an ecological “bottleneck” limiting pileated woodpecker populations in the northern Rocky Mountains (Warren 1990). Snowpack makes logs and low stumps unavailable to feeding woodpeckers. Because the project area is in a high snowfall zone, winter snow depths could render local habitat sub-optimal for pileated woodpeckers. It appears that vegetation type and snow conditions in the study area may be limiting rather than the amounts of old growth.

Large live and dead trees and down logs provide foraging, resting, and reproductive habitat for these species. Down logs provide pine marten with access to spaces under snow cover, where they hunt small mammals. Barred owls favor stands having open understories that allow these birds to maneuver easily and also forage along forest edges and wetlands.

The Forest Plan provides for a network of “core” habitat areas to meet the reproductive needs of species associated with old-growth forests. Core habitat areas are spaced more or less evenly across the forest in a grid pattern. Management Area 1 (MA 1) is a Forest Plan allocation managed specifically for barred owls. Core habitat areas for pileated woodpeckers and pine marten are located across most of the Forest. Each habitat area is large enough to provide for the needs of one breeding female of its target species: 600 acres for barred owls, 300 acres for pileated woodpeckers, 160 acres for pine marten, and 75 acres for northern three toed woodpeckers. The distance between areas reflects the average dispersal distance for each species: 10 miles for barred owls, 5 miles for pileated woodpeckers, and 2.5 miles for pine marten. The larger habitat areas can support more than one species. For example, barred owl areas (MA 1) are large enough to support a breeding pair of owls, as well as pileated woodpeckers, pine marten, and northern three-toed woodpeckers.

Two “replacement habitat areas” are located adjacent to each core habitat area for pine marten and pileated woodpeckers. A core area and its replacement are managed on a 180-year rotation system. At any given time, one would be providing the required acreage of suitable reproductive habitat while the other is being managed to provide future habitat.

### **Travel Corridors**

Forested corridors are necessary for animals such as pine marten to move across a managed forest landscape and make full use of habitat. The Forest Plan, as modified by Regional Foresters Amendments 1 and 2, requires that at least two corridors be maintained between neighboring core habitat areas and other mature and old-growth forest stands. These corridors must be at least 400 feet wide. Trees in these areas should average at least 9 inches in diameter and canopy closure should meet or exceed 50%.

### **Primary Excavators**

Woodpeckers (e.g., pileated, northern flicker, downy, hairy, and northern three-toed) were selected as indicators because of their dependence on snag habitat. The Forest Plan specifies that standing dead and replacement trees, 15 inches in diameter and larger, will be retained to provide 60% of population needs. Typically, 2 large snags and 8 replacement trees per acre would be left where available.

The northern three-toed woodpecker was selected to monitor effects to mature lodgepole pine and subalpine fir stands. The Forest Plan states that 75 acres of lodgepole pine or subalpine fir in old-growth or mature successional stages will be maintained for the northern three-toed woodpecker and distributed every two miles. Within these 75-acre blocks, a minimum of two,

hard 10-inch diameter snags are to be retained with a total of 45 snags greater than 12-inches in diameter. The Forest Plan reflects the assumption that core areas established for pine marten would also meet the needs of northern three-toed woodpeckers and other woodpeckers.

### **Large Raptors and Great Blue Heron**

Great blue heron habitat is negligible or non-existent within the analysis area; consequently, analysis of avian species does not include the great blue heron.

Forest hawks (goshawk, Cooper's hawk, and sharp-shinned hawk), great-horned owls, and red-tail hawks are large raptors that probably occupy habitat in the analysis area for foraging and/or nesting. The primary prey of large raptors is birds and small mammals.

Foraging habitat for these species is present with the mosaic of forest habitats interspersed with ski runs vegetated with a dense ground cover of grasses, forbs, and shrubs. The interspersed openings with forest favors species of small mammals and birds adapted to edges of habitat patches.

Nesting habitat is favorable for species such as great horned owls but probably marginal for the other species due to the high levels of human activity and the fragmented nature of the habitat (i.e., ski runs with narrow patches of forest cover, mainly along drainages). Great horned owls are relatively tolerant of humans when nesting. None of these species were observed during baseline studies conducted by Land & Water biologists (Dutton and Elliott 2000 and 2002).

Goshawk nesting habitat typically includes gentle topography with northern aspects and dense stands of large-diameter trees. Foraging habitat includes a variety of forest successional stages, often with open understories.

Goshawks could nest or forage throughout the analysis area, however, habitat does not appear to be optimal for nesting or foraging. The existing ski area does not include large blocks of mature forest (nesting habitat) but has foraging areas (mature forest communities with open understories). The dissected nature of the forest vegetation (i.e., ski runs alternating with strips of forest mostly along drainages) is not optimum goshawk nesting habitat. Goshawks usually select nest sites in the interior of large, relatively intact stands of mature Douglas-fir forest.

Cooper's and sharp-shinned hawks nest in both riparian areas and upland forests. Suitable nesting and foraging habitat may be present in intact strips of forest among the ski runs.

Open ski runs are attractive foraging areas, during snow-free periods, for red-tailed hawks and great-horned owls because small mammals (mice, voles, and ground squirrels) are often plentiful and accessible prey. The forest hawks likely would also hunt on ski runs because ski runs are adjacent to patches of forest cover and likely have good populations of smaller birds that are attracted to edges of forest and meadow habitats.

### **Grouse**

In addition, blue grouse, and Franklin's grouse are also indicator species. Blue grouse is an indicator species because it roosts in mature, limby trees, along ridgetops during winter. It nests in open meadows and shrub habitats and regularly visits springs and other water sources. The Forest Plan states that a minimum of eight, mature, limby Douglas-fir or subalpine fir trees per acre, must be retained on or near ridgetops, in park-like, or open timber stands. Winter roosting habitat is present in the proposed expansion area on ridgetops. Nesting habitat may

be suitable in shrubfields that have formed following logging and clearing of ski runs, although brush is cleared from ski runs as part of normal maintenance.

Blue grouse migrate in elevation seasonally. During the breeding season, they use lower elevation conifer and aspen stands, open meadows, and shrub fields. They tend to move to higher elevations in autumn, often in forest stands adjacent to grassy opening. The ski area provides a favorable mix of forest and openings for blue grouse. They are common year-round residents in the analysis area.

Franklin's grouse is an indicator species that represents lodgepole pine-dependent species. Habitat for this species consists primarily of young, dense, lodgepole pine stands interspersed with mature spruce. This habitat is often a result of stand-replacing fires. The Forest Plan directs that large areas dominated by lodgepole pine stands be managed to maintain 20% in young age classes. Although there are lodgepole pine stands in the analysis area, most stands are overmature and do not provide suitable habitat for Franklin's grouse.

### **Waterfowl**

There is not suitable resting, nesting, or breeding habitat for waterfowl in the analysis area. The perennial streams are too small to provide secure foraging habitat for river ducks such as mergansers and there are no ponds, lakes, or other suitable habitat for dabbling ducks such as mallard, teal, and gadwalls.

### **Beaver**

Habitat for beaver is not present in the analysis area. Beaver may disperse into the area but there is little forage in close proximity to perennial streams to sustain colonization by beavers. Vegetation along perennial streams in the analysis area is composed predominantly of conifer species, not the preferred food of beavers. Beavers typically eat aspen, willow, and cottonwood and also use these species to build dams and lodges. Habitat dominated by forage species preferred by beavers is not present in the analysis area.

### **Northern Bog Lemmings**

Northern bog lemmings typically inhabit peat-accumulating wetlands (i.e., fens and bogs) with a large component of mosses (both brown mosses and sphagnum) and sedges. Wetlands that could provide habitat for bog lemmings are not present in the project area.

### **Big Game Animals**

Forest Plan direction for big game is to emphasize habitat management for deer west of the Pend Oreille River. The analysis area is west of the Pend Oreille River. MA 6 and 8 are land allocations outside the project area identified in the Forest Plan for big game winter range management.

White-tailed deer, mule deer, elk, and moose use habitat in the analysis area. These species seek cover in forested areas on and adjacent to the ski area and forage on shrubs and forbs that proliferate after the clearing of ski runs or logging. These species are present during summer and fall when the snow has melted and forage is available.

During winter, heavy snow accumulations and high levels of human activity displace these animals from the analysis area to lower elevations or south and west facing slopes with less



snow accumulation. The project area does not contain any designated winter range for deer, elk, or moose (MA 6 and 8).

### **Neotropical Migrant Birds**

The USDA Forest Service Landbird Strategic Plan (2000) directs the Forest Service to disclose the effects of forest management on landbirds in environmental documents. On January 10, 2001, President Clinton signed Executive Order 13186 outlining the responsibilities of Federal agencies to protect migratory birds.

Neotropical migrants are land birds that breed in North America and winter in neotropical countries. Many forest-dwelling neotropical migrants have experienced population declines from forest fragmentation on breeding grounds, deforestation of wintering habitat, pesticide poisoning, and cumulative effects of habitat changes (Finch 1991). Another threat to these birds is nest parasitism by cowbirds. Populations of brown-headed cowbirds have expanded in the West. Openings in forest canopies (e.g., clearcuts and ski runs) often allow cowbirds to colonize forest areas and parasitize other bird's nests.

Neotropical migrants that may breed in the analysis area include: calliope hummingbird, rufous hummingbird, red-naped sapsucker, Williamson's sapsucker, ruby-crowned kinglet, Swainson's thrush, American robin, cedar waxwing, Townsend's warbler, western tanager, and chipping sparrow. These species nest in trees and shrubs in conifer forests. Some construct nests in branches of trees and shrubs while others (i.e., sapsuckers) occupy cavities in snags and larger trees.

## **3.3.6 Wildlife: Environmental Consequences**

### **3.3.6.1 Alternative A – The No Action Alternative**

The No Action Alternative would maintain existing conditions at the ski area. There would be no new impacts to wildlife and their habitat. The current wildlife conditions and trends would remain as they are now.

### **3.3.6.2 Effects Common to Alternatives B and C**

The primary difference in effect on wildlife between Alternative B and Alternative C results from the amount of forest clearing for alpine ski runs (310 acres for Alternative B and 230 acres for Alternative C). This clearing relates directly to the amount of available habitat (see **Table 2-7**). New Nordic trails with Alternative B would be longer (10 miles) than with Alternative C (7 miles) and downhill runs would require removal of more acres of forest vegetation.

With the Action Alternatives, direct impacts wildlife and wildlife habitat would result from habitat alteration and displacement of species sensitive to human activities. Relatively common species that may be affected by habitat alteration and increased human presence during the construction phase of the project include mule deer, black bear, white-tailed deer, elk, and moose.

Human presence and activities during construction could displace deer, elk, moose and other species sensitive to noise and humans. The presence of skiers and activities related to skiing (e.g., snow grooming and operation of lifts) would tend to displace wildlife sensitive to these

activities from intact habitat near the ski area; however, during winter few wild ungulates would utilize habitat in the ski area because of deep snow.

Following construction, displaced animals would likely return to undisturbed habitat. During the summer and fall when the snow is gone, elk, deer, moose, and other species of wildlife would likely resume use of habitat on and near the ski area. Ski runs with nearby patches of forest cover are attractive foraging areas for deer, elk, and moose during summer and fall when levels of human activity are low.

During summer and fall, increased mountain bike use and other activities would have the potential to displace animals from habitat in close proximity to human activities. Depending on the timing (both seasonal and daily) and intensity of use, mountain biking and operation of lifts may reduce foraging opportunities for lynx on open ski runs. High levels of human use in summer, near wooded areas, adjacent to ski runs, may also displace animals into more secure habitat away from human activity. If timing and levels of human use were relatively consistent, some individual animals would become accustomed to human presence and use habitat on the ski area even if use levels were high. Animals that do not tolerate relatively high levels of human use would be displaced to habitats farther from the ski area. These displaced animals may compete with other animals now occupying that habitat.

### **Threatened and Endangered Species**

A Biological Assessment (BA) was prepared for this project. This BA was forwarded to the U.S. Fish and Wildlife Service for their review on January 21, 2004. The U.S. Fish and Wildlife Service will issue a Biological Opinion (BO) before the Record of Decision is signed. The determinations are summarized below for gray wolf, grizzly bear and bald eagle, and in **Section 3.3.6.3** for Canada lynx. The BA is available in the project file.

#### **Woodland Caribou (Endangered)**

The 49 Degrees North project area does not contain suitable woodland caribou habitat. In addition, the project area is located approximately 45-50 air miles from the woodland caribou recovery area. The likelihood of woodland caribou occurring within the project area is essentially zero.

**Determination:** This project is expected to have “**no effect**” on woodland caribou populations, habitat conditions, or recovery objectives.

#### **Bald Eagle (Threatened)**

Because bald eagles do not currently nest or winter within or adjacent to the project area, therefore there are no anticipated direct, indirect, or cumulative effects to any known bald eagle nests or wintering areas associated with any of the alternatives. There are no irreversible or irretrievable effects associated with any of the alternatives. The activities proposed with this project will not alter the area's potential use by eagles.

**Determination:** Alternatives B and C would have “**no effect**” on bald eagles.

#### **Gray Wolf (Threatened)**

The Action Alternatives would not affect wolf denning or hunting areas, or rendezvous sites because none of these sites are present on or near the analysis area. There would be no impacts to the prey base locally or regionally.

**Determination:** Alternatives B and C “**may affect, but are not likely to adversely affect**” gray wolves.

### **Grizzly Bear (Threatened)**

Project activities will have a mixed effect on grizzly bear habitat conditions. Potential foraging habitat (grasses and other herbaceous species) would be created on the new ski runs. The project would not remove any potential grizzly bear denning habitat, create any physical barriers to bear movements or increase overall mortality risk. However, the utility of this area to grizzly bears will remain very low due to the existing and planned levels of disturbance and overall lack of habitat security. Therefore, grizzly bear use in the project area is expected to remain very low and any bear activity would most likely be from transitory visitors to the area. Existing management direction to not encourage grizzly bear presence within the analysis area would continue because of potential conflicts with human activity that would increase mortality risk for the bear. There are no anticipated adverse effects to grizzly bear associated with the proposed action. There is a small possibility that project activities may temporarily displace any grizzly bears within the project area, but the likelihood is very low.

**Determination:** Alternatives B and C “**may affect but are not likely to adversely affect**” the grizzly bear.

### **Sensitive Species**

#### **Pacific Fisher**

Fisher are not known to be present on or near the analysis area, but suitable habitat may be present along perennial drainages with mature riparian forest communities and abundant logs and other down woody debris. These riparian communities are western red cedar/hemlock communities at the lower elevations in the analysis area. These communities have abundant down logs and other woody debris but occur in small patches, surrounded by ski runs, roads and other developments. Because of the isolated nature and small patch-size of these communities, they are unlikely to support fisher denning or foraging.

Fishers typically have large home ranges (7-32 square miles). There were no fisher sightings on or near the analysis area. If fishers were present in the proposed ski area expansion, the portion of the area that they inhabit would be a small part of their home range.

**Determination:** Alternatives B and C may impact individuals or habitat, but would not be likely to contribute to a trend toward federal listing or cause loss of viability to the population or species.

#### **Wolverine**

Wolverines may utilize habitat in the analysis area as part of a larger home range. Conversion of high-elevation forest habitat to herbaceous and shrub-dominated openings would not affect the prey base or carrion available to wolverines and would not affect potential denning habitat. High levels of human activity and fragmented nature of forested habitat reduce the likelihood that wolverines would utilize the analysis area.

**Determination:** The Action Alternatives may impact individuals or habitat, but would not be likely to contribute to a trend toward federal listing or cause loss of viability to the population or species.

#### **Townsend's Big-eared Bat**

No habitat for the Townsend's big-eared bat would be affected by the Action Alternatives.

**Determination:** The Action Alternatives may impact individuals or habitat, but would not be likely to contribute to a trend toward federal listing or cause loss of viability to the population or species.

### **Northern Leopard Frog**

Marginal habitat for leopard frogs may be present in perennial streams that drain the analysis area. The high gradient streams and narrow wetlands do not provide suitable breeding habitat for leopard frogs. Typically, leopard frogs breed in still water of ponds and lakes with abundant emergent vegetation and mud bottoms for hibernation. These conditions are not present in the analysis area.

**Determination:** The Action Alternatives may impact individuals or habitat, but would not be likely to contribute to a trend toward federal listing or cause loss of viability to the population or species.

### **Great Gray Owl**

Stands of mature spruce and subalpine fir that would be disturbed by the Action Alternatives may provide suitable nesting habitat for great gray owls because they have a high proportion of large trees and snags that would support nests. Forest opening created by ski runs may provide hunting habitat for great gray owls. This owl often frequents ecotones (i.e. edges of habitat) between forest and meadows or forest and cleared areas because small mammals are often more numerous and the owl can hunt more successfully and catch prey in open areas. The spatial relationship between forest and cleared areas at the ski area may provide favorable foraging habitat for this species; however, great gray owls are rare in northeastern Washington and have not been reported from the analysis area.

**Determination:** The Action Alternatives may impact individuals or habitat, but would not be likely to contribute to a trend toward federal listing or cause loss of viability to the population or species.

### **Peregrine Falcon**

No peregrine falcon breeding habitat exists in the analysis area, but suitable foraging habitat is present on ski runs. Openings created for ski runs would expand foraging habitat for peregrines, which prefer to hunt for birds where the prey cannot easily avoid capture by flying into dense tree cover. No peregrine falcons have been documented in the analysis area although they may be briefly use or pass through the analysis area especially during seasonal migrations.

**Determination:** The Action Alternatives would not adversely affect peregrine falcons and could improve foraging habitat when prey species (e.g., passerine birds and corvids) adapt to the forest/open-land interface created by the proposed expansion.

## **Forest Plan Requirements and Management Indicator Species**

### **Large Raptors and Great Blue Heron**

The Action Alternatives could affect large raptors by removal of forest vegetation that could be used for nesting. Foraging habitat would be improved for red-tailed hawks and great horned owls because areas cleared for ski runs provide productive habitat for small mammals. Stands of forest adjacent to the ski runs and lift towers provide perches for raptors that are attracted to ski runs for hunting.

Thinning of the old-growth stand would decrease nesting habitat for sharp-shinned and Cooper's hawks. These forest hawks prefer densely stocked stands for nesting.

Goshawks nesting habitat would probably not be affected by the proposed expansion because of high levels of human disturbance and fragmentation of habitat have reduced the potential for

this large forest hawk to nest on or near the ski area. Although goshawks could nest in the mature stands that are present along drainages and at upper elevations (**Figure 1-2**), these stands are not typical of habitats selected for nesting (i.e., large patches of mature Douglas-fir and aspen, on north and east-facing slopes, often on lower slopes). Nesting habitat typically includes gentle topography with northern aspects and dense stands of large-diameter trees. Foraging habitat includes a variety of forest successional stages, often with open understories.

Goshawk foraging habitat would be reduced by removal of mature stands of spruce and subalpine fir with relatively open understories. Five acres of high quality foraging habitat (old-growth) would be removed with Alternative C and 60 acres would be removed with Alternative B. Thinning would not deter goshawks from hunting in affected portions of old growth stands, but an important prey species, red squirrel could be reduced in density due to the partial removal of large woody debris. Red squirrels use large woody debris for denning and for caching food. This would be a negligible impact because goshawks also prey on a variety of bird species that would be unaffected by the Action Alternatives. Also, goshawks are mobile and able to utilize other suitable habitat on and near the analysis area.

### **Grouse**

Winter roosting habitat for blue grouse would be reduced by removal of mature subalpine fir/Engelmann spruce on and near the Cottonwood Divide, but patches of trees adequate for roosting (i.e., at least 8 mature, limby trees per acre) will remain. Nesting and brood rearing habitat would not be adversely affected and may improve due to proliferation of shrubs and herbaceous species on cleared ski runs and gladed areas.

No Franklin's grouse habitat (i.e., stands of young, dense lodgepole pine, interspersed with spruce) would be affected by the Action Alternatives.

### **Big Game Animals**

Removal and thinning of forest communities for ski run and cross-country trail construction and thinning would reduce hiding cover but would increase forage. Conversion of forest habitat to ski runs would reduce summer/fall hiding cover for elk and deer and render them more vulnerable to mortality during the hunting season. Cleared ski runs would provide relatively easy pedestrian access for hunters and provide long unimpeded, views for shooting. Also, grass and other herbaceous forage would likely attract elk and deer to openings created by ski runs, increasing their vulnerability to hunting mortality.

Deer and elk would likely be displaced from the analysis area during the hunting season. The Action Alternatives would not likely affect big game numbers during other times of the year. Currently, the ski area provides ample forage (growth of shrubs and herbaceous species on ski runs and gladed areas), but has hiding cover (i.e., vegetation capable of hiding 90% of a standing animal at a distance of 200 feet) limited to linear stands of forest between ski runs. Although the Forest Plan indicates that there should be 50% forage and 50% hiding cover on winter range, there are no directives for forage/cover ratios on summer/fall ranges. The Action Alternatives would incrementally increase forage and reduce hiding cover. The Action Alternatives would have minor effects on both local and regional big game populations.

### **Neotropical Migrant Birds**

Potential impacts to neotropical migrants could occur from removing trees and shrubs from ski runs if the affected trees harbor nests with eggs or young. If active nests are destroyed, eggs and young would also be destroyed. Loss of nests and young from 230 to 310 acres of forest

clearing for ski runs (depending on the alternative) would not likely have a measurable negative effect on local and regional populations of neotropical migratory birds.

Increased parasitism of nests by cowbirds is a possibility with increased clearing for ski runs; however, currently there are few large stands of forest within the analysis area that have not been dissected by timber harvest, ski runs, roads, and trails. If habitat for cowbirds is present under current conditions, it is unlikely that the Action Alternatives would substantially increase the potential for cowbird parasitism.

### 3.3.6.3 Effects Specific to Alternatives B and C

The difference in effects between Alternative B and C is negligible for most wildlife species, despite a slightly larger acreage of forest clearing under Alternative B. For wildlife species the primary differences between the alternatives are:

- The treatment of the old growth forest in the East Basin, and
- The differences in the amount of Nordic trails in the designated Pine Marten Area #62.

Therefore, the species to be addressed in this section are Canada lynx, old growth dependent species (pine marten and pileated woodpeckers), and primary excavators (woodpeckers in general). The following table illustrates the differences in potential effects.

**Table 3-11: Comparison of Alternatives - Wildlife Resources**

Concern	Alternative A	Alternative B	Alternative C
<b>Cleared ski runs</b>			
Existing acres cleared	340	340	340
Additional acres to be cleared	<u>0</u>	<u>310</u>	<u>230</u>
Total acres in cleared ski runs	340 acres	650 acres	570 acres
Old growth cleared for ski runs	0 acres	60 acres	5 acres
<b>Thinned areas for glade skiing</b>			
Existing acres of glade skiing	200	200	200
Additional acres to be thinned	<u>0</u>	<u>270</u>	<u>310</u>
Total acres where the timber has been thinned for glade skiing	200 acres	470 acres	510 acres
Old growth thinned for glade skiing (no old growth trees removed)	0 acres	40 acres	100 acres
<b>Old growth stand (114 acres)</b>			
old growth cleared for ski runs	0 acres	60 acres	5 acres
old growth thinned for glade skiing	<u>0 acres</u>	<u>40 acres</u>	<u>100 acres</u>
Total acres of old growth treated	0 acres	100 acres	105 acres
<b>Pine Marten Area #62</b>			
Forest clearing for Nordic trails in Pine Marten Area #62	0 acres	14 acres	1.5 acres
<b>Lynx Habitat</b>			
Lynx denning habitat (minimum 10% needed in LAU)	4,131 acres 19% of LAU	3,908 acres 18% of LAU	3,939 acres 18% of LAU
Lynx foraging habitat (includes denning habitat)	17,937 acres 83% of LAU	17,516 acres 81% of LAU	17,547 acres 81% of LAU
Total unsuitable habitat (maximum 30% allowed in Lynx Analysis Unit)	3,659 acres 17% of LAU	3,882 acres 18% of LAU	3,851 acres 18% of LAU

## Threatened and Endangered Species

### Canada lynx (threatened)

Potential effects to lynx could result from alteration of habitat, displacement from habitat by human activities, increased competition with other carnivores (e.g., coyotes and mountain lions) and alteration of prey abundance and distribution. Habitat would be altered by conversion of forest to open ski runs, parking lots, roads, and other expansion facilities (**Table 2-7** and **Figures 2-1** and **2-2**).

Although not well documented, studies suggest that competition with other carnivores (e.g., coyote, bobcat, and mountain lion) can adversely affect lynx (Buskirk et al. 1999). Lynx are better adapted than these carnivores to deep snow conditions. Use of roads in winter, packed ski runs, and snowmobile trails can increase competition between lynx with other carnivores by allowing them improved access to habitat with deep snow, better suited to lynx. Coyotes and other carnivores may compete with lynx for food and may harass or kill lynx, especially young animals. Winter track surveys, conducted by Land & Water biologists (Dutton and Elliott 2000 and 2002), indicate that coyotes are abundant on and around the ski area.

Both Action Alternatives (Alternative B and C) would result in increased mileage of packed Nordic trails into lynx denning and foraging habitat (10 miles for Alternative B and 7 miles for Alternative C). The Action Alternatives would increase human access into lynx low-quality foraging habitat and denning habitat. Ski runs would provide human access mainly in winter, but also during other seasons for hikers, mountain bikers, hunters, and other recreationists.

Currently, an extensive system of roads, packed ski trails, and snowmobile trails (**Figure 1-2**) provides access for coyotes into lynx habitat in winter when snow is deep. Coyotes and other carnivores (e.g., bobcat and mountain lion) that may compete with lynx are able to easily access all areas of the existing ski area and proposed expansion area along packed ski and snowmobile trails. Because existing access to the ski area and surrounding habitats is relatively unrestricted due to the presence of packed trails and ski runs, additional packed ski runs would have a negligible effect on access to habitat in and near the ski area to carnivores that could compete with lynx.

### Foraging habitat for lynx

Construction of ski runs and cross-country trails, with Alternative B would convert 223 acres of foraging habitat to unsuitable lynx habitat. The amount of foraging habitat would be reduced from 17,937 to 17,516 acres (83% to 81% of the LAU) (**Table 3-11**). The loss of foraging habitat would increase the amount of unsuitable habitat in the Chewelah LAU from 17 to 18% (3,659 to 3,893 acres). With Alternative C, implementation of the project would remove 192 acres of foraging habitat, reducing foraging habitat from 17,937 acres to 17,547 acres (83% to 81% of the LAU). Alternative C would be similar to Alternative B in increasing unsuitable habitat. Although unsuitable habitat is increased with both Action Alternatives, the amount in the LAU does not exceed the 30% maximum recommended in the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) (**Table 3-11**).

### Denning habitat for lynx

The Action Alternatives would reduce denning habitat from 19% to 18% for Alternative B and C (**Table 3-11**). Alternative B would affect a few more acres than Alternative C due to the longer length of cross-country trails (10 miles vs. 7 miles), and the additional width of the trails (50 feet vs. 25 feet). With both Action Alternatives, denning habitat would remain above 10% of the LAU as recommended in the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000).

#### Diurnal security habitat for lynx

The Action Alternatives would remove potential security habitat, which has the same characteristics as denning habitat. Removal of security/denning habitat would occur with the proposed expansion; however, because no high quality foraging habitat is near the denning/security habitat that would be affected by the proposed expansion, the potential for lynx use is low under current conditions. Due to the prevalence of low-quality foraging habitat in the analysis area and the LAU as whole, use of potential security or denning habitat by lynx in habitat near the ski area is unlikely. Without an abundant prey base near security habitat, there would be little incentive for lynx to frequent potential diurnal habitat in the analysis area.

#### Connectivity habitat for lynx

On a regional level, the Action Alternatives would have a small incremental effect on connectivity of habitat to the north and south of the ski area. Currently, the Cottonwood Divide Road, used in summer and fall by motorized vehicles and winter by snowmobiles, may inhibit lynx movement along the Cottonwood Divide. The proposed removal of forest vegetation near the ridge extending east from Chewelah Peak and contiguous with the Cottonwood Divide and the presence of skiers may discourage, but would not prevent lynx movement.

Lynx cross ski runs and roads as long as hiding cover is available interspersed among the openings. The proposed action would fragment existing lynx foraging habitat into smaller patches. Vegetation removal with the Action Alternatives would be a relatively minor effect since cover is still well distributed throughout the ski area and abundant in adjacent areas. The pattern and amount of cover that would result with the Action Alternatives would have a negligible effect on connectivity within the LAU.

Summer use of the ski area is also likely to increase as a result of the expansion. Mountain bikers and hikers would continue to use roads and trails both on and off the ski area, with or without the proposed expansion. Like winter recreation, summer recreation, especially associated with mountain bikers, would likely increase. Although there is little data concerning the effect of summer recreation on lynx behavior and habitat use, it is unlikely that slight or moderate increases of mountain biking and hiking would have an appreciable effect on lynx use of foraging habitat that would be affected.

Expansion of the ski area would create cleared ski runs in forest habitats. Vegetation on ski runs would be mostly herbaceous species, low shrubs, and tree seedlings. These narrow, linear openings in forest habitats would not inhibit movement of lynx during summer and fall.

During winter, when skiers are present, lynx would likely avoid ski runs during the day, but would cross ski runs at night. Forty-nine Degrees North hosts limited night skiing. No additional night skiing is proposed. Studies of lynx behavior and ecology at ski areas in Canada (Roe et al. 2000) found that lynx frequently were observed on ski runs at night when there was no skiing and appeared to use forested areas between runs, on some ski areas, for hunting, resting and rearing of young.

Although the proposed action would alter habitat characteristics, patches of intact habitat transected by ski runs would be accessible to lynx. Locally and regionally, the Action Alternatives would have minor adverse effects on habitat connectivity for lynx and other forest carnivores.



**Determination:** Based on analysis of effects presented in this evaluation both of the Action Alternatives “adversely affect” Canada lynx. This determination was made because:

- Both Alternative B and C would reduce foraging habitat in the Chewelah LAU by about 2% and denning habitat by about 1%. These habitat reductions are small and would not conflict with recommendations in the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000). Currently, 17% of the LAU is unsuitable lynx habitat. Both Action Alternatives would increase unsuitable habitat by about 1% to 18%. The amount of unsuitable habitat with the Action Alternatives would be below the 30% maximum specified in the Lynx Conservation Assessment and Strategy.
- The Action Alternatives would not reduce denning habitat in the LAU to below the 10% threshold recommended by the Lynx Conservation Assessment and Strategy.
- The Action Alternatives would not prevent lynx movement regionally or prevent access to habitat adjacent to the ski area.
- There is no documented use by lynx of the ski area or area proposed for expansion.
- There would be no increase in road density with the Action Alternatives.
- However, both alternatives would render a small amount of lynx habitat as unsuitable for the life of the ski area permit.

## **Forest Plan Requirements and Management Indicator Species**

### **Old-growth Dependent Species (pine marten)**

Habitat for species associated with old-growth and late-seral forest stands is present in the 114 acre old growth stand, and in the 245-acre pine marten core area (PM #62). Approximately, 10 acres of old growth is also part of the designated pine marten core area, making the total area of suitable habitat for pine marten 339 acres. Both alternatives would result in removal and/or alteration of the some of the old-growth stand and the pine marten core area. This analysis of effects addresses proposed actions that would affect the stand of old growth and the pine marten core area separately although they are contiguous and both provide potential habitat for some species of wildlife with affinities for late-seral forest communities.

### **Alternative B**

Alternative B would have more old-growth habitat removed (60 acres vs. 5 acres for Alternative C) for groomed ski runs, but less old growth thinned for glade skiing (40 acres versus 100 acres for Alternative C). The proposed cross-country trails would remove more vegetation in pine marten core area 62 for Alternative B (14 acres) than Alternative C (3 acres). The Nordic trail in Alternative B would be constructed through the center of the pine marten core area, and have numerous switchbacks (**Figure 2-1**).

With Alternative B the 114 acres of old growth would cease to exist. The pattern and amount of vegetation removed for groomed runs would substantially reduce old growth habitat features (e.g., snags, large woody debris, large trees, and patch size) of the 114-acre old growth stand. After removal of 60 acres and thinning of 40 acres, 14 acres of unaffected old growth would remain, none in patches of more than a few acres. In addition, the stand is expected to enter the stand initiation phase due to the effects associated with stand edge (i.e., wind throw, broken trees, solar desiccation).

Woody debris removed for construction of Nordic trails in the pine marten core area would be placed adjacent to the ski runs to provide cover for pine marten and their prey. Large logs, stumps and other woody material would be piled so as to form openings in the piles free of soil, rocks and other debris (this debris is often present in piles created by dozers). Downed woody

material is important for pine marten because it provides habitat for prey species such as red squirrels and other small mammals. Logs and other woody debris also form openings under snow, which provide access to prey and cover for pine marten.

With Alternative B, removal of downed logs and thinning of trees, and standing snags in the 114-acre old-growth stand would reduce the habitat value, especially in winter, for pine marten. With removal of trees and standing snags, less large woody debris would accumulate on the forest floor, reducing foraging and denning habitat for pine marten.

Piling the vegetation removed for Nordic trails in the pine marten core area, in adjacent areas, would help mitigate for degradation of pine marten habitat in the core area but would not completely eliminate impacts. The removal of the overstory canopy for ski trails would be a long-term effect that would reduce habitat quality. With Alternative B, the capacity of the habitat to support existing numbers of pine marten would be reduced from current levels. However, 231 acres of pine marten core habitat would remain intact, well above the 160-acre minimum specified in the Forest Plan.

Alternative B could have an inhibitory effect on movement of marten through the ski area although pine marten are not especially sensitive to human presence. Relatively broad, open ski runs in the existing ski area and new runs in the area that is currently old growth may discourage pine marten from approaching and moving through the ski area especially during the day when there are large numbers of skiers. Removal of vegetation in the old-growth stand, contiguous with the pine marten core area, could inhibit movement of pine marten among designated pine marten core areas but would not eliminate movement among blocks of suitable habitat. With Alternative B, sufficient forest vegetation would remain intact to allow movement of pine marten among core areas and stands of old growth outside of the analysis area.

#### Alternative C

Alternative C would affect the 245-acre pine marten core area (**Figure 2-2**) and old-growth stand (114 acres) through construction of downhill runs and Nordic trails. Nordic trails would remove about 1.5 acres of habitat in the pine marten core area. In the adjacent old growth stand, downhill runs would remove about 5 acres of vegetation and thin an additional 100 acres of old growth. Increased human activity on newly constructed ski runs could displace pine marten from habitat near ski runs, especially during the day when skiers are present; however, pine marten are not especially sensitive to human activity if foraging and hiding opportunities remain accessible.

Removal of 5 acres of forest vegetation and thinning of 100 acres would leave only 9 acres of old-growth forest intact. Thinning would remove trees smaller than 7 inches and 90% of downed large woody debris would be left on most of the 100 acres that would be thinned. Snags would be left standing where they do not pose a safety hazard.

Removal of trees and the larger downed woody material would reduce the suitability of the entire old-growth stand as pine marten habitat. Large woody debris and snags provide habitat for pine marten and prey species. Typically, pine marten forage under the snow in pockets protected from snow cover by logs, stumps and other woody debris protruding above the snow. Removal of large woody debris, combined with snow packing by skiers would reduce the “sub-nivean” (below-snow) habitat sought by pine marten and their prey (e.g., red squirrels and other small mammals).

Like Alternative B, Alternative C would remove vegetation for construction of Nordic trails and would be piled in adjacent undisturbed habitat to provide large, woody debris important to pine marten and their prey. The Nordic trails would have negligible effects on pine marten and their use of the core area, as only a small acreage of forest vegetation would be removed. The Nordic trails would be relatively narrow (25 feet wide) and would not prevent movement of pine marten within the core area. With removal of 1.5 acres of habitat in the pine marten core area, 243 acres of intact habitat would remain. The core area would remain well above the minimum of 160 acres identified in the Forest Plan as the minimum size of a pine marten core area.

Like Alternative B, Alternative C would not prevent movement of pine marten among old-growth stands and pine marten core areas. The capacity of the analysis area to support pine marten would be slightly reduced (2 percent) by cutting and thinning of the old-growth stand but the designated pine marten core areas in and adjacent to the analysis area would continue provide habitat for pine marten at near current levels.

#### **Pileated Woodpeckers**

Effects of the Action Alternatives on pileated woodpecker habitat would result from removal of old growth for alpine ski runs, and thinning old growth stands for gladed skiing.

##### **Alternative B**

This alternative would remove about 60 acres of old growth through the construction of cleared ski runs. The continuous pine marten core habitat area, which is also potential habitat for pileated woodpeckers, would be reduced by removal of 14 acres of vegetation for Nordic trails. With alternative B, the combined effects of removal of old growth (60 acres) and late-seral vegetation in the pine marten core area (14 acres) would eliminate about 20% of the existing pileated woodpecker habitat in the analysis area. Additional thinning of 40 acres of old growth and removal of large woody debris with Alternative B would additionally reduce foraging opportunities for pileated woodpeckers.

##### **Alternative C**

Alternative C would result in removal of 5 acres from the old-growth stand and 1.5 acres from the pine marten core area, resulting in a loss of about 3% of pileated woodpecker habitat in the analysis area. Thinning of an additional 100 acres of the old-growth stand and removal of 10% of the large woody debris would further reduce foraging habitat for pileated woodpeckers. Retention of snags, and large trees in the old-growth stand would maintain nesting sites near current levels.

#### **Primary Excavators**

Removal of a portion of the old-growth stand and associated thinning to remove smaller trees, snags, and large woody material would reduce habitat value for woodpeckers. Alternative B would largely remove old-growth habitat values for primary excavators, whereas, Alternative C would have minor effects. Retention of large trees and snags and 10% of woody debris would maintain potential nesting and foraging habitat near current levels with Alternative C.

### **3.3.6.4 Cumulative Effects**

Other projects in the cumulative effects area that could affect wildlife habitats in the future and are in progress or planning include:

- Quartzite Watershed Management Project,
- Flowery Trail Road reconstruction,

- Chewelah Peak Learning Center,
- Additional homes on Flowery Trail Community subdivision leased lands, and
- New homes or commercial development on private lands in Section 7.

Cumulative impacts to wildlife movement (i.e., connectivity of habitat) would result from proposed expansion of the ski area, the upgrading of the Flowery Trail Road, increased mountain bike use, and increased backcountry use by snowmobilers and Nordic skiers. Expansion of the ski runs may incrementally discourage movement of lynx and other forest carnivores between habitats north and south of the ski area; however, the small incremental impact that would result from ski area expansion would be negligible.

Upgrading of the Flowery Trail Road and expansion of the ski area would increase traffic and speed of traffic to and from the ski area, which would increase mortality risk to wildlife from collisions with vehicles. Species such as moose are present in the vicinity of the Flowery Trail during winter and may travel on roads when snow is deep, increasing the risk that they would be struck by vehicles.

Unsuitable lynx habitat would slightly increase in the Chewelah LAU affected by the proposed expansion. The expansion would convert 450-457 acres (depending on the alternative) of denning habitat and low-quality forage habitat to unsuitable lynx habitat. This increase, with either Alternative B or Alternative C, would result in an increase of unsuitable habitat in the LAU from 17% to 18%.

### 3.3.6.5 Conclusions

**Alternative A** would not change existing wildlife conditions.

**Alternative B** would result in losses of pine marten habitat from the pine marten core habitat (#62) and from the adjacent old-growth stand. Although removal of 14 acres of habitat from the pine marten core area would not reduce the size of the area below the 160-acre minimum specified in the Forest Plan, it would reduce the capacity the core area to support pine marten by an incremental amount (i.e., 20%). The capacity of the analysis area to support pine marten would be further reduced by removal of 60 acres and thinning of an additional 40 acres of pine marten habitat from the contiguous old-growth stand.

The combined effects of removal of forest from the old-growth stand and the pine marten core habitat would incrementally reduce the capacity of the analysis area to support pine marten by at least 16%. Although the capacity of the analysis area would be reduced with Alternative B, it would still retain sufficient acres of pine marten core habitat (231 acres) to meet the 160-acre minimum specified in the Forest Plan.

**Alternative C** would have a negligible effect on pine marten habitat. Approximately 2% of pine marten habitat in the analysis area would be removed from the pine marten core area and the contiguous old-growth stand.

Pileated woodpecker, another species dependent on the late seral forest communities in the pine marten core habitat and contiguous old-growth stand would be reduced in the analysis area by 20% with Alternative B and about 2% with Alternative C. Sufficient pileated woodpecker habitat would remain with both Action Alternatives to meet the requirements of the Forest Plan.

Lynx habitat would be slightly reduced with both Action Alternatives but neither alternative would reduce amounts of denning habitat or foraging habitat below levels specified in Lynx Conservation Assessment and Strategy. Amounts of unsuitable habitat with both Action Alternatives would remain well above the 30% maximum specified in the Lynx Conservation Assessment and Strategy.

Effects on other wildlife species would be negligible with both Action Alternatives.

## **3.4 HUMAN ENVIRONMENT**

### **3.4.1 Heritage Resources: Affected Environment**

#### **3.4.1.1 Regulatory Framework**

The Colville Forest Plan (USDA Forest Service 1988a) identifies the goal to "Manage cultural resources on the Forest to maintain their scientific, social, and historical values." The Forest Plan standards state that:

- The Forests' cultural and historic resources will be identified, protected, interpreted, and managed.
- Project areas will be inventoried and evaluated prior to management activity.
- State and Federal agencies and Indian tribes will be consulted about cultural resource activities and projects within their interest.
- Specific management direction which incorporate interpretation will be completed for the National Register of Historic Places.

The last standard listed above is related to implementation of the National Historic Preservation Act and coordination with the State Historic Preservation Offices in the State of Washington. After cultural inventories, appropriate sites are nominated to the National Register of Historic Places (NRHP). In compliance with the Forest Plans, a cultural resource survey and evaluation for the NRHP would be required for areas of ground disturbance affected by the Action Alternatives. Consultation would also occur with the State Historic Preservation Office. Cultural sites found during a pre-construction survey or during construction would be preserved or mitigated.

#### **3.4.1.2 Methods**

The analysis for cultural resources included:

- Review of reports of previous projects adjacent to the current expansion area.
- Review of pertinent portions of reports from the same township.
- Knowledge of the cultural history of the area, previous ethnographic and/or archaeological work, and the topographic and environmental features of the area as related to known patterns of prehistoric use.
- Examination of the area by wildlife, hydrology, and vegetation resource specialists reporting to the cultural resource specialist.
- A cultural inventory by Transect Archaeological (Nakonechny and Muyeller 2002).

Background cultural information was available in prehistoric and historic overviews of the CNF, cultural resource files of the CNF, the National Register of Historic Places, historic maps,

ethnographic literature, and topographic maps. With this knowledge, the specialist was able to estimate prehistoric and historic site distribution.

### **3.4.1.3 Area of Analysis**

The area analyzed for heritage resources includes all lands that could be impacted by the Action Alternatives. The "area of potential effect" includes areas where direct impacts would occur, such as areas to receive ground disturbance through road reconstruction, building construction, and contouring ski runs. It also includes areas where expansion activities may have an indirect (visual or auditory) or cumulative effect on cultural resources or their setting, such as clearing for ski runs within the view-shed of a historic structure.

Transect Archaeological cultural specialists conducted reviews of cultural features in the proposed expansion area. The review indicated that two historic sites had been previously recorded in the area of potential effect. Transect Archaeological updated these two sites and recorded an additional four historic sites.

## **History and Existing Conditions**

### **Prehistoric Human Use**

According to oral tradition, the area lying between the Colville River valley and the Calispell Divide was unoccupied when first viewed by the Kalispel looking for a place to settle. This area has also been identified in various sources as the northern part of the range of the Spokane Indians and the territory of the Chewelah Indians. All of these groups were part of the Plateau cultural tradition and the Salishan language grouping. As such, their resource-based economy included seasonal harvesting and trading for the various materials and foodstuffs required for life in the Plateau region. A principle reason for traveling through the area would have been to access the fishery and lowlands areas, which were generally used to gather camas, one of the important staples of the Plateau diet, as well as waterfowl and waterfowl eggs. Upland areas were generally used to gather a variety of berries, most notably huckleberry, and for hunting game.

There is evidence that the native people used the area for gathering (probably huckleberries) because of the location of peeled cedar trees near what has been identified as a part of the Chewelah Trail. This was also near a branch of the Kalispell Trail. The tree scars are generally small, indicating the construction of a small gathering-type basket or use of the bark as a platter or serving vessel. There have been no other cultural sites identified as Native American use sites within the project area so we have no hard data to support the idea that Native peoples spent time at any particular site within the area (Mattson 1999). We can, however, assume that parts of the project area were used as at least short-term habitation sites and that there were trails passing through the area dating from pre-contact times.

Probably the only practice that would have significantly affected the ecosystem within the area was the use of fire to enhance resource habitat. There is ethnographic evidence of Native Americans setting fires to enhance habitat for huckleberries and forage for deer in the period around the 1850s. There is no data available indicating how early this practice may have been used or in what specific areas.

### **Mining**

Mining began in the Colville Valley around 1850. In the late 1880s, the areas around Eagle Mountain and Jay Gould Ridge became the focus of major mining efforts. A promising lead and

silver strike in 1883 lead to the development of the town of Embrey two miles east of what is now Chewelah. The founders of the Juno-Echo Mine named Embrey, Kelly, Wagner and Hanschel, created the town in 1883. It was located on the Flowery Trail about one-half mile east of the Chewelah cemetery. In the late 1880s three buildings were moved to what is now Main Street in Chewelah, and Embrey slowly disappeared.

Timber harvest would have occurred in connection with the development of mine properties. The location of a good source of timber for framing shafts and other uses was a necessary part of early mine development. Timber harvest, the construction of adit and shaft features, talus piles, pits from the actual mine working, and possible modification of stream channels for use at the mines, all would have potentially affected the environment. The ski area currently does not contain any patented mining claims.

### **Homesteading**

The effects of homesteading on the landscape included timber harvest and the clearing of land for agricultural purposes, as well as stream modification and road building. Human-caused fire could also be considered an effect of homesteading. Historically, fire, both natural and human-caused, had an impact on the lower flanks of Chewelah Peak.

The earliest record of permanent Euroamerican settlement in this area is probably the Metis community in the Colville valley, dating from some time in the early 1800s. When Fr. DeSmet came through the area in the late 1840s he noted the community was already established. There were several homesteads recorded along the Colville River and up some of the tributaries at the time the Government Land Office<sup>6</sup> (GLO) survey was conducted in the late 1800s. The heaviest homesteading activity occurred in the last decade of the 1800s, after the GLO survey was completed, through the 1930s, when the Resettlement Act returned many of the marginal homesteads to public land. There were several areas around the ski area that were homesteaded. Some areas that reverted to public land were around Horseshoe Lake, Upper Cottonwood, Tenmile Creek and North Fork Calispell Creek. One half section of railroad (Burlington Northern R.R.) land was located in the ski area (Section 7), Chewelah Basin Ski Corp. now owns this land.

Athol Playfair, who lived up the canyon from Horseshoe Lake, dammed the little creek that flowed into a meadow on his section of land, and created a small horseshoe-shaped lake. Here he operated a fish hatchery for many years, producing cutthroat trout eggs, which he contracted to the Department of Fish and Game. In 1974, Horseshoe Lake undermined the dam and plunged down the canyon to the Chewelah Valley, causing great damage.

### **Roads**

The Calispell Trail was used by early explorers, missionaries and fur traders to cross from the Pend Oreille country (Calispell Valley) to the Colville River Valley. The Hudson's Bay Company maintained a herd of horses in the Calispell Valley around 1830 (Chance 1973). The route taken between the horse herd and Fort Colville could have crossed at Flowery Trail Pass (4,046 ft) or near by. Early explorers, David Thompson in 1811, John Work in 1826, and Sir George Simpson in 1841 also noted travel between these two points. In 1858 the Flowery Trail was named as the route taken by Fr. Vercruysse on his way from St. Francis Regis Mission to the Crees in Chewelah and on to the St. Ignatius Mission. Fr. Pierre Jean DeSmet also traveled in this vicinity in 1841. A 1930 GLO Survey Plat shows a part of what is identified as "Old Calispell

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<sup>6</sup> The Government Land Office or GLO surveyed lands into Townships, Ranges and Sections.

Trail" running through sections 20, 29, and 30 just northeast of Woodward Meadow as the location of an early trail. Since it is the nature of roads and trails to be reworked for subsequent use, there is a strong likelihood that at least parts of the Flowery Trail Road may have been one of the original trails over the mountains.

Explorers' maps from as early as the 1850s indicate a trail running from the Spokane River north along the east side of the Colville River Valley. With the establishment of the military at Fort Colville in 1850, this route became a military supply route known as the Colville/Walla Walla Wagon Road.

A letter written by an early settler indicates that the Cottonwood Road was built in 1867. An 1881 map of Washington Territory by the Department of the Interior shows a trail oriented along Cottonwood and Calispell Creeks.

The Chewelah Trail or Chewelah Wagon Road was designated such on the 1893 GLO plat map. It runs in roughly the vicinity of a branch of the Calispell Trail and parallel to Flowery Trail Road. It was also referred to as an Indian Trail in the survey notes and as such could have been a reworking of an earlier trail.

The current Flowery Trail Road was built by the Civilian Conservation Corps in the 1930s. This road provides access to the Flowery Trail Subdivision and 49 Degrees North Ski Area, and is the main road connecting the Pend Oreille River Valley and the Colville River Valley. McPherson Spring is located along the Flowery Trail Road and is used for drawing water in an unimproved manner by the general public (trail access only). The Federal Highways Administration and Washington Department of Transportation (Washington DOT 1996) is currently working on re-alignment and reconstruction of the Flowery Trail Road, to be completed in 2006.

The history of the town of Chewelah (est. 1883) is culturally diverse, with immigrants largely displacing Native Americans and settling in the area to share the prosperity provided by agriculture and the timber industry. As the town flourished, the settlers also succeeded in producing an abundance of crops, as well as developing mining properties.

Skiing at Chewelah Peak (elev. 5,773 ft) has attracted numerous year-round recreational users since before the Flowery Trail Road was opened to motorized traffic in the early 1930s. The Colville National Forest formally recognized the use of Chewelah Peak in the winter in approximately 1935. A permit was issued for development of a site approximately two miles west of the present site of 49 Degrees North. The completion of Cy's Hut in 1936 and a rope tow in 1939 firmly established winter recreation on Chewelah Peak. Cy's Hut burned in 1949.

After the completion of the two story Chewelah Mountain Lodge in 1950 and installation of a double chair lift in 1951, the area experienced an increased volume of recreational users and tourists. Over a period of years, obsolescence of the lift and lack of revenue due to a gradual decline in the condition of the facilities, culminating in closure in early 1968.

On May 6, 1970, the Chewelah Basin Ski Corporation was formed and submitted a bid to develop and operate a ski resort in a basin approximately two miles east of the old area. Development commenced in late 1970 and continued during the summers of 1971 and 1972. Construction of three lifts, runs and the Main Lodge was completed and the area first operated for public use in late 1972. In 1976, the U.S. Forest Service approved a Master Plan allowing for continued upgrading and expansion within the existing Special Use Permit. A fourth lift was



added in 1980 and new runs to support the lift have continued to attract an increasing number of visitors. In June of 1996 Chewelah Basin Ski Corporation was sold to the Eminger Family.

The ski area currently operates a full winter and limited summer schedule. The Forest Service permit area offers skiing on approximately 900 acres with an additional 320 private acres of base and slope area for a total area of 1,220 acres. Washington State Department of Parks and Recreation, in conjunction with Spokane County Parks and Recreation, maintain nearly 60 miles of snowmobile trail on nearby lands.

From November to April, 5 ski lifts serve a 540-acre alpine (downhill) ski run network with a lift capacity of approximately 1,800 skiers per hour. Skiers and visitors are provided support in the Main Lodge on a year-round basis and parking is presently available for approximately 1,000 vehicles<sup>7</sup>. The Main Lodge, the five lifts, water and wastewater systems and maintenance facilities are privately owned and are operated by the Chewelah Basin Ski Corporation under a Forest Service Special Use Permit.

A 262-acre 101-lot subdivision on Washington State Department of Natural Resources land is currently under a long-term lease to The Flowery Trail Community Association. A 20-acre parcel on Washington State Department of Natural Resources land is currently under a long-term lease to Educational Service District 101 D.B.A. the Chewelah Peak Learning Center. An 85-acre parcel on Washington State Department of Natural Resources land is currently under a long-term lease to Chewelah Peak Investments, LLC.

### **3.4.2 Heritage Resources: Environmental Consequences**

#### **3.4.2.1 Alternative A – The No Action Alternative**

The No Action Alternative would not change the existing situation concerning heritage resources.

#### **3.4.2.2 Effects Common to Alternatives B and C**

As stated in **Section 3.4.1.3**, there are six cultural resource sites recorded in the area of potential effect. Both Action Alternatives have the potential to impact archaeological sites. Through design and/or method of implementation, all sites will be avoided if either alternative is selected.

Alternatives B and C could potentially impact undiscovered archaeological sites in MA 3C area as a result of Nordic trail construction and tree thinning activities; however, most of these activities would occur in areas with steep slopes and little probability of encountering cultural resources. Construction activities for the Nordic Center, skating rink, and the Nordic trails below elevation 3,800 feet would have a higher probability of encountering cultural resources, but site surveys (Nakonechny and Muyeller 2002) did not find cultural resources in areas that would be affected by these components of Alternative B and C.

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<sup>7</sup> Prior to 2003 the parking lot capacity was about 570 vehicles. The Flowery Trail Road reconstruction project increased the size of the parking areas.

### 3.4.2.3 Cumulative Effects

No known cultural resources would be affected by the Action Alternatives because all known sites would be avoided if either Action Alternative is selected. Consequently, there would be no cumulative effects when the proposed project is considered in relation to other foreseeable activities that would occur in the analysis area (e.g., upgrading of Flowery Trail Road, construction of the Chewelah Peak Learning Center, residential or lodge construction on nearby private and State lands).

### 3.4.2.4 Conclusions

The proposed action meets Forest Plan and other applicable standards because scientific, social, and historical values would be maintained. Existing resources have been inventoried, and the Forest Archeologist determined that Section 106 requirements of the National Historic Preservation Act have been met. The local American Indian tribes have been consulted.

## 3.4.3 Recreation: Affected Environment

### 3.4.3.1 Regulatory Framework

The Colville National Forest Plan (USDA Forest Service 1988a) “sets the directions for managing the land and the resources of the Colville National Forest”. This direction includes Forest-wide goals, objectives and Management Area (MA) prescriptions and standards for recreation management.

The Forest Plan responds to the issue, “How can the Forest influence community economics?” with the direction to, “emphasize investments in recreation” (Forest Plan, pg. 3-1). Another issue identified is “How can the Forest provide a variety of recreation experiences?” The response to this issue includes, “support for expansion of 49 Degrees North Ski Area”.

Forest wide standards and guidelines in the Forest Plan (pg. 4-35, 36) that relate to 49 Degrees North’s proposed expansion include:

- Provide for a full range of new or expanded recreation facilities commensurate with projected public needs and desires.
- Emphasis is to be placed on upgrading (rehabilitation) existing sites to meet today's recreational user needs and desires prior to proposing additional sites.

The Desired Future Condition for recreation in ten years is stated as: *“Winter recreation will play an important role on the Forest. The existing Nordic (cross-country) trail system will be expanded by 20 to 30 percent. The Forest will continue to cooperate with Spokane, Stevens, and Ferry Counties to have 200 to 300 miles of Forest roads groomed for snowmobile use. The permit for 49 Degrees North will be expanded to provide facilities to meet demand”* (Forest Plan, pg. 4-61).

In fifty years the Colville National Forest Plan anticipates, *“Winter recreation will have increased in importance and more designated trails, routes and trailhead facilities will be available. The 49 Degrees North Ski Area will have been expanded to maintain competitiveness and accommodate increased demand”* (Forest Plan, pg. 4-64).

The 49 Degrees North Mountain Resort and all alternatives for the proposed expansion are located within MA 3C; the emphasis for MA 3C is downhill skiing. The Management Goal for

MA 3C is to: "Provide for quality winter recreation opportunities including downhill skiing, Nordic skiing and other compatible uses." The Recreation Standards and Guidelines for MA 3C are to:

- Design and locate improvements on winter sports sites to provide safety to users and to harmonize with the natural environment.
- Provide opportunities for year-round recreation use of the permitted area and facilities.
- Develop trails to provide dispersed recreation opportunities.
- Wayside exhibits for interpretation may be developed.

### 3.4.3.2 Area of Analysis

The area of analysis for direct and indirect effects is MA 3C and the adjacent private lands in Section 7. Also included is the proposed Nordic trail in the NW¼ of Section 6 and the SE¼ of Section 36, both adjacent to MA 3C. The cumulative effects area is market area for 49 Degrees North, encompassing the communities of Colville, Newport, and the Spokane-Coeur D'Alene metropolitan area. This cumulative effects area includes other the ski areas competing for the same ski area market as 49 Degrees North.

### 3.4.3.3 Methods

Recreation baseline information was obtained from site visits, from interviews with Forest Service resource specialists and managers of 49 Degrees North, and from review of NEPA documents for other actions on the Colville National Forest.

### 3.4.3.4 Existing Conditions

49 Degrees North currently operates a day-use downhill skiing winter sports area and provides limited summer recreation activities. There is also limited night skiing. The 1,220-acre ski area operates on both private land (320 acres) and NFS Lands (900 acres). Facilities include: the Main Lodge, 4 chairlifts, 1 surface-lift, water and sewage systems, maintenance facilities and parking lots.

Skier numbers have increased at 49 Degrees North in recent years due to factors such as ski area improvements, snowboarding and general population growth.

**Table 3-12: Skier Use at 49 Degrees North Ski Area**

Year	Total Skier Visits	Season (days)	Visitor per Day
1987-88	64,508	135	478
1988-89	59,356	113	525
1989-90	36,113	78	463
1990-91	24,465	62	395
1991-92	55,969	92	608
1992-93	65,000	96	675
1993-94	63,276	105	603
1994-95	50,914	96	530
1995-96	43,164	70	617
1996-97	49,925	100	499
1997-98	52,210	100	522
1998-99	66,164	100	661
1999-00	65,922	100	659
2000-01	59,905	100	590
2001-02	76,866	100	768

Evaluation of the ski industry standards such as Comfortable Carrying Capacity and Skier Ability Distribution have identified specific needs at 49 Degrees North, including additional lift capacity, more intermediate ski trails, additional parking, expanded base facilities and more diverse recreation opportunities. Increased demand for Nordic skiing has suggested the feasibility of Nordic Center and groomed trail system. Establishment of the Chewelah Peak Learning Center on adjacent State lands has created a potential for expanding summer uses at 49 Degrees North to include: nature studies, hiking, mountain biking and horseback riding. State and private land adjacent to the ski area presents an opportunity to provide overnight facilities and individual homes. There are no developed camping or picnicking facilities within the proposed expansion areas.

Approximately 50% of the skier visits at 49 Degrees North are from local residents in Stevens and Pend Oreille counties. These “local skiers” favor ski area features such as low cost, short drive and homey atmosphere over higher price, longer commutes and elaborate services. Skiers from Spokane (about 50 miles) and Coeur d’Alene (about 60 miles) comprise the other 50% of the 49 Degrees North skier visits.

Other ski areas that compete with 49 Degrees North include:

- Mt. Spokane near Spokane, Washington;
- Silver Mountain near Kellogg, Idaho;
- Schweitzer Mountain near Sandpoint, Idaho;
- Lookout Pass near Mullan, Idaho;
- Red Mountain, near Trail, BC, Canada; and
- Whitewater, near Nelson, BC, Canada.

Most of these areas are similar in size, lift ticket price and terrain to 49 Degrees North. Each of these ski areas is dominated by skiers from their immediate local areas. Mt. Spokane skiers come mainly from the local Spokane area. Silver Mountain skiers mainly come from the local north Idaho area between Mullan and Coeur d’Alene with some skiers coming from Spokane. Lookout Pass skiers mainly come from the local north Idaho area with some coming from Spokane on the west and Missoula on the east. Red Mountain and Whitewater draw skiers from south central British Columbia, and from northeast Washington.

Schweitzer Mountain is a full-service destination resort with much more terrain, snowmaking, lifts, grooming, lodging and entertainment services, as well as much higher prices. Schweitzer skiers mainly come from a geographic area that includes eastern Washington, northern Idaho, northwest Montana and southeast British Columbia. Some Schweitzer skiers travel from outside the region.

### **Forest Roads**

Roads in the analysis area include one paved road (Flowery Trail Road) and unpaved forest roads that provide access for recreation and management of forest lands and facilities associated with the 49 Degrees North ski area (**Figures 1-1 and 1-2**) Most roads in the analysis area were created for mineral exploration and logging and are used by automobiles, ATVs, motorbikes, four-wheel-drive vehicles and mountain bikes during snow-free seasons. Many roads in and near the analysis area are not plowed in winter and are used by Nordic skiers and snowmobilers.

### **Snowmobiles**

A ten-mile snowmobile route leaves Flowery Trail Road 4 miles east of the ski area (North Fork Calispell Creek), follows National Forest roads, and rejoins the Flowery Trail Road at the Flowery Trail Community Subdivision (see **Figure 1-1**). Many snowmobilers from Stevens County utilize roads and trails on the west and south sides of Chewelah Peak to access 60 miles of Washington State Parks and Recreation maintained trails.

49 Degrees North hosts an annual snowmobile hill climb, “Buried in Tombstone”. The two-day event is held in April after the ski area closes. The climb attracts about 50 competitors per day and hosts a total of about 200 people per day.

### **Downhill Skiing**

The existing and proposed development for downhill skiing are described in **Chapters 1 and 2**. Most downhill skiers stay within the ski area boundary and ski the slopes of the developed ski area. A few skiers leave the ski area boundary after using the ski lifts or parking lot for access to the backcountry for Nordic and backcountry skiing.

### **Nordic Skiing and Summer Trail Use**

The Chewelah Mountain Trail is a 12 mile Nordic, hiking, biking and horse trail (see **Figure 1-1 and 1-2**). This trail system includes a 0.6 mile Nordic loop (Little Larch Trail) near the Main Lodge, about 5 miles on Forest Road 4300474 (East Basin Road and Calishew Trail), a spur trail (Summit Trail) that goes to Chewelah Peak, and about 3.5 miles on Forest Road 4342. Some skiers access the trail by taking a lift to the top. The ski area grooms about 8 miles of the Nordic trail; it does not groom the portion of on Forest Road 4342 which is a groomed snowmobile route. Most of this trail is outside the ski permit area.

An primitive abandoned road connects the Flowery Trail Community subdivision ski area near the new main entrance<sup>8</sup>. This 1-mile road passes near the Chewelah Learning Center. Currently, this road is used by Flowery Trail Community residents for hiking, Nordic skiing, and snowmobiling.

### **Other Summer and Fall Use**

Except for the 12 existing RV Parking sites at 49 Degrees North, there are no developed camping or picnicking areas within six miles of 49 Degrees North. The existing RV sites have electric hook-ups only and no dump station for the RVs. Many people use the deck at the ski lodge for picnics. Huckleberry picking is very popular due to the size and quantity of berries. Off-trail hiking and wildlife viewing also occurs in the analysis area. There are no designated wildlife viewing areas, but wildlife viewing occurs on the ski area and from roads. 49 Degrees North receives dispersed hunting activity during the big game and upland bird seasons. Hunting within the ski area permit area is light.

## **3.4.4 Recreation: Environmental Consequences**

This section addresses the effects of alternatives evaluated for 49 Degrees North project.

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<sup>8</sup> The entrance created by the reconstruction of Flowery Trail Road. Construction of this entrance road is expected to be completed in the summer of 2004.

#### 3.4.4.1 Alternative A - The No Action Alternative

Under the Alternative A – the No Action Alternative, existing recreation activities would remain unchanged. The Colville Forest Plan suggests that expansion at 49 Degrees North is very likely and is consistent with local economic and recreational goals. The Forest Plan’s recreation direction emphasizes providing for the public interest in winter sports, including expansion of 49 Degrees North. Alternative A would not address these statements in the Forest Plan and the expectation they create that an expansion will likely occur.

A family-oriented ski facility such as 49 Degrees North often serves as an introduction to skiing for children and adults. Customer service and updated facilities are elements that enhance the recreational experience, especially for new skiers. Without modern state-of-the-art facilities, some skiers could experience less satisfaction with skiing.

The No Action Alternative may result in a decline in skier use of 49 Degrees North. Older facilities and fewer services than competitors could cause an economic decline and lead to the eventual loss of 49 Degrees North as a public ski area.

#### 3.4.4.2 Effects Common to Alternatives B and C

The effects of both Action Alternatives (B and C) are similar for most recreation resources. Both Action Alternatives would increase recreational use and variety of ski terrain. The overall Comfortable Carrying Capacity of the resort would double from approximately 2,000 to 4,000 (Table 3-13). Crowding would be reduced by new ski lifts, ski runs, parking, and lodge facilities. Safety would be enhanced and reducing lift lines and ski run congestion would reduce the chance for collisions, thus improving safety and enhancing skier enjoyment.

**Table 3-13: Differences in Potential Impacts to Recreation Resources**

Concern	Alternative A	Alternative B	Alternative C
Number of Chair Lifts	5	6	6
Chairlift Comfortable Carrying Capacity	2,000	4,000	4,000
Ski Runs	340 acres (existing)	650 acres (310 acre increase)	570 acres (230 acre increase)
Tree Skiing Areas	200 acres	470 acres (270 acre increase)	510 acres (310 acre increase)
Total Area of Ski Runs and Tree Skiing	540 acres	1,120 acres	1,080 acres
Nordic Trails	12 miles	20 miles	17 miles
Nordic Center	0	1,800 sq ft	1,800 sq ft
Ice rink	None	0.2 acres	0.2 acres
Lodge/Visitor Services Facilities	21,000 sq ft	57,000 sq ft	57,000 sq ft
Parking (including RV Parking)	11 acres	15 acres	15 acres

The expansion of the 49 Degrees North permit area would likely increase recreational use in the analysis area. Winter use associated with skiing and summer dispersed recreational use would increase with improved and expanded facilities. The proposed Nordic Center, including new Nordic trails, skating rink, restrooms, lockers and food service would expand opportunities for winter recreation.

Increased summer recreation is expected at 49 Degrees North because of the proposed RV parking, tent camping, increased trail network, and residential and lodge development on nearby private and State lands. The proposed Mid-Mountain Lodge would offer interpretive programs, views, and host special events. RV Parking will include 16 additional electric hookups (for a total of 28 hookups) within the proposed parking lot perimeter. Mountain bike

opportunities will be developed throughout the area, primarily using the new Nordic trail system and other existing trails and roads. The upgraded base to summit lift will provide access to the top of Chewelah Peak, with accompanying trails descending to the base area via existing service roads. Mountain bike use will not be allowed on downhill hiking trails in erosive soil areas. The mountain bike trails will be segregated from the hiking trails wherever possible to avoid user conflicts. Horseback riding will continue on roads and trails.

There would be an unknown incremental increase in dispersed summer and winter recreation outside the ski area boundary because of the Action Alternatives. The Action Alternatives would attract people seeking lift-assisted skiing, cross-country skiing, ice skating, hiking, or mountain biking. In contrast, recreation users seeking primitive recreation (e.g., back-country skiing and hunting) in this area may be deterred by the additional development on 49 Degrees North. The Action Alternatives would:

- Increase the areas under the Special Use Permit from 900 acres to 2,100 acres, an increase of 1,200 acres of National Forest dedicated to developed recreation.
- Increase winter and summer access into the drainage to the east of the existing ski runs.
- Modify existing cleared ski runs and construct new runs. Total area of cleared ski trails would increase from 340 to 650 acres (Alt B) or 570 acres (Alt C).
- Modify existing tree-skiing opportunities and construct new tree-skiing runs. Total tree skiing area would increase from 200 acres to 470 acres (Alt B) or 510 acres (Alt C).

Establishment of the Chewelah Peak Learning Center on adjacent State lands has created a potential for expanding summer uses at 49 Degrees North to include: nature studies, hiking, mountain biking and horseback riding. The planned pedestrian, cross-country, snowshoe trail on the old CCC road from the Flowery Trail Community Association and Chewelah Peak Learning Center would be a recreation opportunity for people using these facilities.

Increasing the Comfortable Carrying Capacity of the chairlifts from 2,000 to 4,000 while adjusting the balance of terrain difficulty to more closely match skier demand would provide for greater customer enjoyment and safety.

Increased recreational use at 49 Degrees North could decrease business at other ski areas in the region. However, most of these other resorts also have a customer base of local skiers who are unlikely to travel as far as 49 Degrees North for a similar quality experience. Increased use at 49 Degrees North could also come from local population increases over time or from new skiers who will have improved access due to Flowery Trail Road reconstruction.

#### **3.4.4.3 Effects of Alternatives B and C**

##### **Alternative B**

Alternative B would provide a total of 1,120 acres of ski runs and tree skiing (**Table 3-13**).

Currently there are about 12 miles of Nordic trail in the analysis area. Alternative B would build an additional 10 miles of Nordic trails. In addition, about 2 miles of Nordic Trail located on Forest Road 3400474 would be lost when this road becomes a County Road. Upon completion of Alternative B, the Chewelah Peak area would have about 20 miles of Nordic trail. Approximately one mile of the proposed Nordic trail has 16 switchbacks to gain 800 feet elevation on a ridge in Section 8 (**Figure 3-1**). The switchbacks are tight with short spans between turns. This portion of the Nordic trail system would be difficult to ascend or descend requiring advanced cross-country skiing skills to negotiate. Advanced skiers would likely

consider the difficult terrain an improved recreational opportunity, whereas a beginning or intermediate skier may not enjoy the challenge.

### **Alternative C**

Alternative C would provide a total of 1,080 acres of ski runs and tree skiing (**Table 3-13**), which is 40 acres less than Alternative B.

Alternative C would build about 7 miles of new Nordic trails. About 2 miles of Nordic trail on Forest Road 4300474 would be lost. Upon completion of Alternative C, the Chewelah Peak area would have about 17 miles of Nordic trail. Alternative C utilizes a different trail alignment than found in Alternative B. The new Nordic trail has a long linear configuration with four switchbacks. This alignment would eliminate the difficult skiing section of Alternative B and allow skiers with less skill to enjoy the trail.

#### **3.4.4.4 Cumulative Effects**

No other recreational developments are currently planned within the cumulative effects area that include cross-country skiing and ice skating. Other developed ski areas that share the 49 Degrees North ski and snowboard market include Mount Spokane, Schweitzer Basin, Silver Mountain, and Lookout Pass. Lookout Pass Ski Area recently adopted a new Master Development Plan which expands the ski area. The effect of the Lookout Pass expansion on the 49 Degrees North expansion is difficult to evaluate; however, both are small ski areas that draw most of their customers from nearby markets.

Lookout Pass Ski Area is about 100 miles east of Spokane Washington on the Idaho-Montana border. The major market for Lookout Pass is Mullan to Coeur D'Alene, Idaho and this area is also experiencing significant population growth to support its expansion (USDA Forest Service 2002d). Lookout Pass also draws skiers from Montana, which is outside the 49 Degrees North market area. Due to increased skier numbers, recent population growth, and continuing population growth estimates in both market areas, it is likely that skier demand would support both expansion projects.

The Chewelah Peak Learning Center, and the proposed 49 Degrees North expansion would increase the recreation demand for hiking, skating, skiing, snowshoeing, and unstructured outdoor recreational opportunities. The cumulative effect of the Learning Center and expansion of ski area would be more people recreating than with either project separately. The increase in number of people recreating would not affect the quality of recreation, as there would be sufficient capacity to accommodate demands from both the ski area and Learning Center.

New homes in the Flowery Trail Community subdivision and development of private land in Section 7 (Nelson Creek) would also increase numbers of people seeking recreational opportunities. Development in Section 7 would be more attractive if a new ski lift services the area and administration of the existing Forest Service road is transferred to Stevens County. Similarly, development in the Flowery Trail Community subdivision would be more attractive if the ski area expands and offers more recreation opportunities, such as cross-country skiing and ice skating.



### **3.4.4.5 Conclusions**

#### **Alternative A**

No Action would keep the resort Comfortable Carrying Capacity at its current level of about 2000 skiers per day. No new lifts, runs, trails, parking areas, Nordic Center, ice rink, or other support facilities would be constructed. This alternative would not respond to suggestions in the Forest Plan that expanded recreation opportunities including 49 Degrees North are desirable and are likely to occur. As facilities continue to age skiers may choose to ski elsewhere. If skier numbers cannot support operation of the area it could be forced to close.

#### **Alternatives B and C**

Both Action Alternatives would double the Comfortable Carrying Capacity of the resort to 4,000 skiers per day and would provide for expanded and more modern recreational opportunities. Both Action Alternatives would provide additional ski terrain, parking, lodge area, Nordic trails, a Nordic Center, ice rink and support facilities including water and wastewater treatment. Summer recreation opportunities would also increase including tent camping, RV camping, and hiking, mountain biking and horseback riding on the new cross-country trails. Alternative B provides slightly more additional Nordic trail than Alternative C (10 miles vs. 7 miles); however, the extra trail is so steep that its use would be limited to advanced skiers.

Both Action Alternatives would allow 49 Degrees North to compete effectively in the local ski market and provide for continued increases in skier numbers. These factors should ensure the continued economic viability of the resort and its contribution to the local economy and recreation resource. Both Action Alternatives would respond to suggestions in the Forest Plan that expanded recreation opportunities including 49 Degrees North are desirable and are likely to occur.

## **3.4.5 Socioeconomics: Affected Environment**

### **3.4.5.1 Regulatory Framework**

The Colville National Forest Plan (USDA Forest Service 1988a) does not include standards specific to social and economic issues.

### **3.4.5.2 Area of Analysis**

Direct, indirect and cumulative effects to socioeconomic resources were evaluated for Stevens and Pend Oreille counties. Chewelah and Colville, Washington are in Stevens County, whereas Cusick/Usk and Newport, Washington are in Pend Oreille County.

### **3.4.5.3 Methods**

Information for socioeconomic resources was obtained from the 2000 U.S. Census, the Chewelah Chamber of Commerce, Stevens County, and from the State of Washington web site. Information about ski area issues such as employment, taxes, user fees and visitor experiences was provided by ski area owner/operator John Eminger.

### 3.4.5.4 Existing Conditions

49 Degrees North Mountain Resort is located along the border of Stevens County, and Pend Oreille County, Washington. Most of the workers at the ski area come from the nearby communities of Chewelah and Colville, Washington. A few volunteers and workers are from Usk, Cusick, Lone, Newport, Spokane, Deer Park, Cheney and Pullman, Washington. Although some volunteers and workers live in more distant communities, the effect of the ski area on employment and income is largely local (Chewelah and Colville, Washington).

Approximately 50% of skiers at 49 Degrees North live in Spokane, and the remaining 50% live in the Tri-County area (Stevens, Pend Oreille, and Ferry counties). Although 49 Degrees North draws skiers from distant communities, these larger outlying areas experience fewer economic effects from ski area use than the smaller nearby communities. The communities of Chewelah and Colville experience economic effects from the ski area to a greater degree than other regional population centers with more people and diverse economies. Local communities cater to skiers by providing motels, gasoline stations, and restaurants. With reconstruction and paving of the Flowery Trail Road, improved access may result in more skiers choosing to ski at 49 Degrees North instead of other areas. This improved access may also generate new skiers from Pend Oreille County.

### Population

The 2000 population of Stevens County was estimated to be 40,066 people (U.S. Census Bureau 2000a). Stevens County is one of the fastest growing counties in the State of Washington. Stevens County experienced a 29.5% increase in population in the 1990s (U.S. Census Bureau 2000a). Most of the residents of Stevens County live in or near the towns of the Chewelah and Colville, and several small-unincorporated town sites.

The 2000 population of Pend Oreille County was estimated to be 11,732 (U.S. Census Bureau 2000b). Between 1990-2000, Pend Oreille County increased in population by 31.5% making it another of the fastest growing counties in Washington. Most residents of Pend Oreille County live in the corridor of the Pend Oreille River Valley. The corridor includes the cities of Metaline Falls, Lone, Cusick/Usk, and Newport and the several un-incorporated towns. People living outside the cities and towns tend to live in small subdivisions or dispersed home sites in the river valleys.

Employment in Stevens/Pend Oreille counties did not keep pace with in-migration in the 1990s. Most of the incoming residents are retirees from the Spokane and Coeur d'Alene building second/retirement homes. New jobs have been created in both counties; however, unemployment rates have remained relatively unchanged during the 1990s.

### Employment

**Table 3-14** shows the composition of employment in the two counties by industry in 1990 and 2000. Between 1990 and 2000, numbers of full and part-time employees in Stevens County increased from 13,013 to 17,307 an increase of 25%. Similarly, the number of full and part-time employees in Pend Oreille County increased from 3,347 to 4,511 between 1990 and 2000, an increase of 26%. The largest industries in both counties, with respect to employment, are education, health and social services, manufacturing, and government.

**Table 3-14: Full- and Part-Time Employment by Major Industry, Stevens and Pend Oreille Counties, 1990 and 2000 (number of employees)**

Industry / Sector	Stevens County		Pend Oreille County	
	1990	2000	1990	2000
Agriculture, mining and forestry	1,128	1,162	236	225
Construction	712	1,205	226	339
Manufacturing	2,391	2,177	703	562
Transportation and utilities	650	857	246	375
Wholesale trade	252	381	50	77
Retail trade	2,023	1,808	471	364
Finance	419	565	52	163
Education, health, social services	1,948	3,520	438	943
Recreation, accommodations, and food	171	1,320	26	301
<b>Total employment</b>	<b>9,694</b>	<b>12,995</b>	<b>2,448</b>	<b>3,349</b>

Source: U.S. Department of Commerce, 2000.

### Employee Earnings

**Table 3-15** shows the composition of total employee earnings in the two counties in 2000. In Stevens County, earnings were dominated by manufacturing (28.9 percent), government (27.4 percent), and retail services (20.1 percent). In Pend Oreille County, the largest components of 2000 earnings were government (37.4 percent), manufacturing (36.5 percent), and retail service (11.3 percent).

Stevens County per capita income in 2000 was \$15,895, which was 69.1% of the State average and 73.6% of the national average. In the 1990s, the county experienced unemployment rates above 10 %. The number of people in poverty was 6,316, about 15.9% of the county residents (U.S. Census Bureau 2000e).

In the 1980s unemployment rates ranged from 7.4 to 33.2% per year in Pend Oreille County. From 1990 to 1997, the unemployment rate was an average of 15% per year (Washington Employment Security Dept. 2000b). Job losses in logging and mill operations in Pend Oreille County caused a high unemployment rate and low average income levels. In 2000, the county's per capita income was \$15,731, which was 68.4% of the State average, and 72.8% of the national average. As of 2000, the number of people of all ages in poverty was 2,095, about 18.1% of county residents (U.S. Census Bureau 2000f).

**Table 3-15: Employee Earnings by Major Industry, Stevens and Pend Oreille Counties, 2000 (figures are in thousands of dollars)**

Industry / Sector	Stevens County	Pend Oreille County
Agriculture	2,798	82
Mining	2,733	Not provided
Construction	7,680	1,247
Manufacturing (including lumber)	71,215	26,029
Transportation and Utilities	11,106	2,031
Wholesale Trade	4,980	Not provided
Finance	Not provided	1,494
Retail Trade	23,455	4,992
Services	49,651	8,066
Government	67,626	26,610
<b>Total Employment</b>	<b>245,995</b>	<b>71,119</b>

Source: Washington Employment Security Department, 2000a and 2000b

Several public scoping comments for this EIS stated that the affordability of skiing is important to families who use 49 Degrees North. Many families in Stevens and Pend Oreille counties are economically unable to visit the larger destination resort areas. Lift ticket prices at 49 Degrees North have been significantly lower than local destination resorts and this attracts many families.

### **3.4.6 Socioeconomics: Environmental Consequences**

#### **3.4.6.1 Alternative A – The No Action Alternative**

The impact of the No Action Alternative would be a decline in the 49 Degrees North market share, as other ski areas provide new skiing experiences, expand, and upgrade equipment and facilities. Schweitzer Ski Area, approximately 40 miles east of 49 Degrees North, has undertaken major expansion during the last few years. Lookout Pass, about 100 miles east of Spokane is also expanding. Crowding at 49 Degrees North and a lack of varied terrain may cause skiers to seek recreation at other family-oriented areas.

#### **3.4.6.2 Effects Common to Alternatives B and C**

Increased visitation to the ski and recreation area is expected as a result of the Action Alternatives. Based on population projections, the number of skiers at 49 Degrees North is expected to increase by 20% over the next 5 years from 75,000 skiers per year to 90,000 skiers per year (Eminger 2002a). This increase is expected to bring a moderate increase in spending to the analysis area.

The expanded ski area would provide a wider variety of ski terrain, reduce crowding, provide education and visitor information, and overnight facilities. Economic impacts of the Action Alternatives are expected to include:

- A temporary increase in construction employment for nearby contractors,
- Increased employment by the ski area for construction and operation of the new facilities,
- Increased local-area expenditures by new employees and skiers new to 49 Degrees North,
- Increased taxes paid by the ski area, and
- Increased special use fees paid by the area to the USDA Forest Service, a portion of which could be rebated back to the affected counties.

The estimated impacts on employment, income, local expenditures, and taxes discussed in the following sections are approximations of direct and indirect economic impacts of the Action Alternatives. For small, mostly rural counties, expenditure multipliers for calculation of indirect and induced effects of expenditures are generally moderate.

It is not expected that the Action Alternatives would have detectable impacts on major governmental infrastructures such as schools, roads, or emergency services. While the expected increased popularity of 49 Degrees North may in the future lead to some increase in associated support businesses such as lodging facilities, or vacation/residential development in the area, the degree to which such development would occur is unknown. Private land (320 acres) is available for lodging and vacation home development within the Special Use Permit area.

## Employment

Currently, 49 Degrees North operates approximately 100 days per ski season. Most employees are from Stevens County, Washington. With access provided by the reconstruction and paving of Flowery Trail Road, more workers may come from Pend Oreille County in the future. For the Action Alternatives, workers and contractors would be hired from the local area when possible; therefore, employment demographics are not expected to change.

Construction of lifts, runs, and other facilities would be completed in two years. Contracts would be let to local loggers for tree removal associated with new ski trails and lifts. The ski area would employ an architect and building contractor for the lodge expansion. The owner, Chewelah Basin Ski Corporation, would construct lifts. Lift installation would require at least 4 additional employees through the construction season, plus separate contractors for concrete and soils engineering.

Employment at the ski area, following construction, is shown in **Table 3-16**. Assuming that part-time employees would work on average 20 hours per week, the expanded facility would increase employment by the equivalent of approximately 26.5 full-time year-round employees. Workers and contractors would generally be from the local region.

**Table 3-16: Employment at 49 Degrees North (excluding construction workers)**

<b>Employment Type</b>	<b>Current Employment</b>	<b>Additional Employees for Proposed Action</b>	<b>Total After Proposed Action</b>
Full-time Year-Round	7	4	11
Full-time during Ski Season Only	70	10	80
Part-time during Ski Season Only	130	25	155
<b>Total</b>	<b>207</b>	<b>39 (26.5 FTE)</b>	<b>246</b>

Source: Eminger 2002a.

The estimated cost of construction would be \$3,000,000 (Eminger 2002a). Assuming that 50% of the construction budget would be direct wages, this budget would support approximately 46 full-time construction jobs for the two years of construction. This number was derived assuming that construction wages would be about \$32,387, the median household income per year for full-time employees (U.S. Census Bureau 2002a). This number of jobs represents a 3.5% increase in construction jobs within Stevens County over reported 2000 levels.

In 2000, Stevens County supported an estimated 15,568 full- and part-time jobs. Under both Action Alternatives, 26.5 additional (full-time equivalent) jobs would be added to this number for permanent ski area employment and 26 additional jobs would be added for the 2 years of construction (assuming one-half of the construction employees reside outside Stevens County). This increase would likely be added to the job base in Stevens County, where most of the employees at 49 Degrees North reside. These ski area and construction jobs would be a 0.33% increase in the job base in Stevens County.

In the 1990s, Stevens County experienced unemployment rates in the winter of approximately 12-15% (Washington State Employment Security Dept. 2000a). Given the small increase in employment anticipated from the Action Alternatives and the unemployment rates within the local area, increased employment demands within the area should easily be met with the Action Alternatives.

## **Income**

It is estimated that under typical winter and summer operations, the expanded ski and recreation area would increase its annual payroll by \$120,000 over current levels (Eminger 2002a). This level of additional wages is 0.07% of retail income estimated for Stevens County in 2000 (183.9 million dollars).

During the construction phase for the Action Alternatives, \$1,500,000 in construction wages would represent 0.81% of total retail income within Stevens County.

## **Visitor Expenditures**

Upon completion of expansion, total skier days per year are estimated to increase from approximately 75,000 to 90,000 in 5 years. This estimated increase would bring new visitors to the area and increase the frequency of visits by some current skiers. Local-area expenditures on lift tickets, food, ski rental and instruction, and gas would be associated with this increased use. Most of this money would likely be spent at the ski area while some would be spent for lodging, eating and drinking establishments, gas stations, and stores within Stevens and Pend Oreille counties.

The projected average revenue per skier day at 49 Degrees North was \$26.30 for the 2001/2002 season (Eminger 2002a). The projected increase in visitors from about 75,000 skiers per year to 90,000 skiers per year would lead to an additional \$736,000 being spent by skiers per year, assuming spending rates increase by \$4 per skier. Rises in lift ticket prices are anticipated because of increased benefits and wages, not because of the proposed expansion costs (Eminger 2002a).

Approximately 50% of skiers at 49 Degrees North come from the greater Spokane metro area and 50% from Ferry, Stevens, and Pend Oreille counties. If future visitation follows existing demographic trends, it is estimated that 50% of additional expenditures in the next 5 years would come from skiers living outside the Tri-County area. Out-of-area skiers would therefore spend 50% (\$1,368,000) of the \$2,736,000 per year in 5 years. This estimated increase in direct local-area expenditures is a conservative estimate of the total additional expenditure impact on the economy of Stevens County. Not considered in the above estimate are expenditures made by non-local skiers within Tri-County area but not at 49 Degrees North. Also not included are the secondary indirect and induced economic effects of the new non-local skier expenditures in Tri-County area.

It is estimated that an increase of 10% of user days would come from local-area residents. The expenditures of these individuals would not represent an infusion into the local economy. Money spent by local-area residents on trips to 49 Degrees North would likely be money that would be spent in the local economy anyway.

Expenditures made by local residents for increased skiing at the expanded ski area would generally represent changes where money is spent within the local economy, but not changes in the total level of spending in the local economy. There would be businesses that would benefit from this spending shift and some businesses that would experience economic impacts, as some local spending would shift from current patterns and establishments to skiing.

The economic impact of the Action Alternatives to other ski areas is difficult to measure, as increases in skiing and snowboarding popularity, as well as increases in population, may offset impacts to other ski areas.

During the construction phase, there would be an increase in local expenditures to the degree that equipment and supplies would be purchased locally, and that funds borrowed or used for these purchases would not have been otherwise used for purchases in the local economy. Considering the overall size of the local-area economy, the level of local expenditures during the construction phase would likely represent a small portion of total expenditures in Tri-County area.

### **Taxes**

The Action Alternatives would contribute to the State and local revenue base through property, income and sales taxes. The amount of tax revenue would depend on the cost of personal property improvements, the increase in payroll, and the profitability of the ski area. If all of the proposed buildings and ski lifts were constructed under the Action Alternatives, the ski area would pay additional property taxes on ski lifts, buildings and equipment. As all of the proposed buildings would be in Stevens County, Stevens County would receive more property tax revenue after the expansion than Ferry or Pend Oreille Counties. Additional property taxes would include about \$34,717 per year to Stevens County, a 0.87% increase in total county property tax income.

### **User Fees Rebated to County Government**

Holders of USDA Forest Service Special Use Permits pay user fees to the Forest Service. With any Action Alternative, the fee would be 1.5% of gross sales at the area. Of this amount, 25% would be rebated from the Forest Service to the counties where the use is located. A 1.5% fee would require approximately \$41,040 be paid to the Forest Service per year, and \$10,260 rebated to Stevens County.

### **Affordability of Skiing**

The affordability of skiing is important to families economically unable to visit the larger destination resort areas. The Action Alternatives would not cause a large increase in ticket prices. The projected increase of skier visits would pay for construction and infrastructure costs; however, as payroll expenses go up, there would be an increase in lift ticket prices. Payroll expenses have been rising in the last few years because of the competition for skilled workers, cost-of-living increases, and health insurance benefits. The Action Alternatives are not expected to affect the affordability of skiing at 49 Degrees North.

### **Economic Viability of the Ski Area**

The predicted increased visitation to 49 Degrees North is expected to enhance economic viability of the ski area. Ski area management estimates that about 75,000 skier visits per year are needed for the operation to remain viable in its current configuration (Eminger 2002a); however, the current lodge and lift configuration does not accommodate this number of skiers. The ski area (including expenditures for the Action Alternatives) is economically feasible with a 20% increase in skiers, or 15,000 skiers per year (Eminger 2002a). This increase seems reasonable to attain based on 30% increases in Stevens and Pend Oreille County populations in recent years and the indication this trend will continue.

The economic viability of the ski area is important to the local economy, which has few other significant sources of income, employment and taxes.

### 3.4.6.3 Cumulative Effects

The cumulative effects on socioeconomics is related to many factors beyond the scope of this analysis. Resort expansion is only one of many complex issues that influence the local economy, employment, taxes, home-buyer decision-making and availability of services. Some of the features drawing homeowners to Stevens and Pend Oreille Counties are available private land, relatively low land prices, and dispersed recreation opportunities in nearby forested areas. Stevens County housing growth has been moderate in the past 10 years. The golf course in Chewelah has increased the attractiveness of the area to new development, housing starts and in-migration. The resort expansion could contribute slightly to the overall increase in attractiveness for individuals and businesses considering locating in the area.

### 3.4.6.4 Conclusions

Alternative A would not provide for the long-term viability of 49 Degrees North and could eventually result in the loss of a significant number of jobs, taxes and associated income for local businesses. Both Action Alternatives would increase revenues, taxes, employment and visitor expenditures in local businesses.

## 3.4.7 Visual Resources: Affected Environment

### 3.4.7.1 Regulatory Framework

The Colville National Forest Plan (USDA Forest Service 1988a) sets the directions for managing land and the resources of the Colville National Forest. This direction includes Forest-wide goals, objectives and Management Area prescriptions and standards for visual resource management.

The Action Alternatives would take place within MA 3C. The emphasis for MA 3C is downhill skiing and the Management Goal for MA 3C is to: *“Provide for quality winter recreation opportunities including downhill skiing, Nordic skiing and other compatible uses”*. The Visual Quality Objectives and Guidelines for MA 3C state that *“A visual quality objective of Partial Retention is the goal for the developed portion of the area”*.

The scenic integrity level for MA 3C, which includes the existing 49 Degrees North ski area and proposed expansion is “moderate”. This term replaces “partial retention” used when the Forest Service converted from the “Visual Management System” to the “Scenery Management System” for evaluating scenic landscape values.



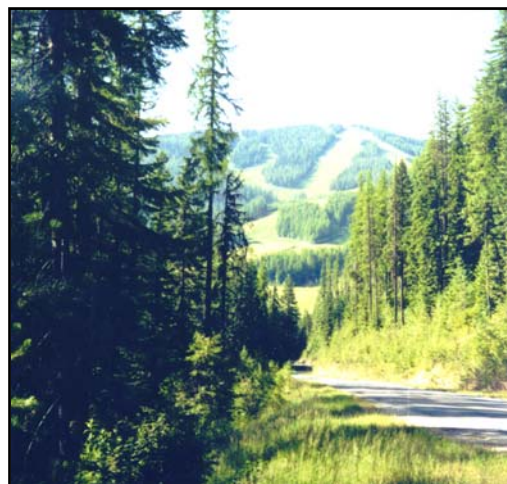
**Figure 3-5: View of Chewelah Peak from Hwy 20, near Usk.**



Because the emphasis for this MA is downhill skiing, the valued landscape character is composed of ski runs, lifts, and associated facilities; therefore, the scenic level “moderate” is consistent with the visual character of the existing developed recreation facilities at 49 Degrees North.

#### 3.4.7.2 Area of Analysis

The area of direct, indirect, and cumulative effects for visual resources includes the proposed expansion area and travelways, home sites, and other commonly used sites which would have the potential to view the expansion area on the north and east sides of Chewelah Peak. Travelways identified as potentially affected by the proposed action include portions of Highway 20 near the junction of the Flowery Trail Road; Highway 395, near Colville; the Flowery Trail Road; and county, private, and forest roads and trails near the proposed expansion area. Visual resources were evaluated using a combination of site visits, literature research, and information from visual specialists at the Colville National Forest.



**Figure 3-6: View of Ski Area from Flowery Trail Road.**

#### 3.4.7.3 Existing Conditions

The proposed expansion area has landforms and vegetation typical of the region. The landscape of the ski area, part of the Southern Selkirk Range, is characterized by low round-topped mountains covered with conifer forest interspersed with meadows and logged areas. Forested ridges and slopes with narrow river bottoms dominate these landscapes and create a consistent scenic quality with few unique visual features.

Most of the landscape along the Southern Selkirk Range was burned 1910-1920. Non-stocked brush fields tend to dominate southern slopes, immature sapling and small saw timber stands of mixed composition are on the cooler north aspects.

Topography and tall trees limit views from within the Pend Oreille Valley; however, some timber harvest units are visible from parts of the valley. East of 49 Degrees North, the Flowery Trail Road follows Tenmile Creek along a narrow valley bottom flanked by timber and a few small meadows. Scattered residential dwellings and a few hay fields are visible along the valley bottom.

Roads are obvious alterations on the landscape, some appearing as linear features that contrast with the surroundings. Other dominant features are power lines, with straight corridors through the trees across different ownerships.

Chewelah Peak is seen for short stretches (less than three minutes driving time) of Highway 395 and Highway 20 as background (i.e., more than four miles from the viewer). The peak appears as a forested mountain against the horizon, with barely visible openings created by ski runs. See **Figure 3-5**.

Part of the existing ski area is visible from a short stretch of the Flowery Trail Road, about one-half mile from the ski area. Open ski runs interspersed with linear forest between the runs are visible for short driving distances (i.e., less than one-quarter mile) along the Flowery Trail. See **Figure 3-6**.

Lights from night skiing are not directly visible from the valleys to the east or west. Lights from night skiing are occasionally visible from both valleys as reflections against the clouds when clouds are present at the right altitude.

### **3.4.8 Visual Resources: Environmental Consequences**

#### **3.4.8.1 Alternative A - The No Action Alternative**

The No Action Alternative would not change the existing situation. Scenic landscape changes could occur from other types of management on and off the Forest, and from natural events such as fires, wind storms, earthquakes, or floods.

#### **3.4.8.2 Effects Common to Alternatives B and C**

The proposed 49 Degrees North expansion would not be seen from Highway 395, Highway 20, the Flowery Trail Road, the Chewelah Peak Learning Center, nearby residences, or other facilities in the foreground (300 feet to one-half mile) or the middleground (one-half mile to four miles) because of tall trees or ridges that block views.

One difference between Action Alternatives B and C is in the location of the proposed Nordic trail as it passes through section 8. Another difference between the Action Alternatives is the amount of clearing for Nordic trails and alpine ski runs (see **Table 2-7**). The difference between these alternatives would have no effect on visual resources in MA 3C. The cross-country trails and proposed alpine ski runs would not be visible from any viewpoints outside of the existing or expanded ski area.

In addition to not being visible from points of public access outside of the ski area, the proposed landscape alterations are consistent with the MA 3C visual management directive. The Forest Service's Scenery Management System states that, "Direct and human alterations may be included if they have become accepted over time as positive landscape character attributes". The MA 3C management direction is to provide downhill skiing; therefore, ski runs, lifts, and other skiing facilities are part of the "valued landscape" and the proposed expansion would meet the Forest Plan direction for Moderate Scenic Integrity Level.

#### **3.4.8.3 Cumulative Effects**

Because there are no visual effects that would result from the Action Alternatives, there are no cumulative effects.

#### **3.4.8.4 Conclusions**

Visual quality objectives would be met under any of the alternatives since the ski area is almost completely hidden from view from all roads, communities and private lands in the surrounding landscape of Stevens and Pend Oreille Counties. This is one of the most well-hidden ski resorts in the western United States in terms of visibility.

## **3.5 OTHER DISCLOSURES**

### **3.5.1 Adverse Environmental Impacts that Cannot be Avoided**

Implementation of any of the Action Alternatives would result in some adverse environmental effects. The severity of the effects would be minimized by implementation of the mitigation measures described in **Chapter 2 - Mitigation**.

#### **3.5.1.1 Air Quality**

Temporary effects on air quality due to slash burning are unavoidable under the Action Alternatives. The effects would be minimized by scheduling burning in accordance with the directives of the State of Washington.

#### **3.5.1.2 Soil Productivity**

Losses of soil productivity are unavoidable in areas covered by permanent structures and features, such as the proposed buildings, parking lot, and lift towers. Erosion of soil from other disturbed areas would be minimized by BMPs, but a small amount of soil may be eroded, displaced or compacted prior to revegetation.

#### **3.5.1.3 Water Resources**

A small, temporary increase in sediment delivery may occur during culvert installations and grading near streams. However, implementation of BMPs and other mitigation measures would reduce the potential for substantial or sustained sediment delivery to streams. Increased water yields from timber harvest on the proposed for ski runs and lifts would be very small.

#### **3.5.1.4 Fisheries**

Potential impacts from vegetation removal, culvert installation and grading may have small effects on fisheries resources but should be mitigated sufficiently by implementing BMPs, INFISH standards and additional permitting requirements.

#### **3.5.1.5 Wildlife**

Impacts of expanding the ski area would result from conversion of forest habitat to herbaceous communities on ski runs and other expansion facilities. Small effects on some wildlife species or habitat may occur. No direct impacts on threatened, endangered, sensitive or management indicator species are expected. Neotropical migrant birds may be affected slightly by removal of trees and shrubs on ski runs. Indirect impacts would occur from increased recreation use in the 49 Degrees North area.

#### **3.5.1.6 Vegetation**

Under the Action Alternatives, timber would be cleared from between 230 (Alternative C) and 310 acres (Alternative B). These acres would no longer be available for timber production as long as 49 Degrees North operates. Portions of the old growth stands present in the analysis area would be cleared (60 acres in Alternative B and 5 acres in Alternative C). Proposed

activities could increase the risk that noxious weeds would spread. No impacts are expected to range resources, or endangered, threatened and sensitive plant species.

### **3.5.2 Relationship Between Local Short-term Use and Long-term Productivity**

This section discusses short-term effects (beneficial and adverse) of the alternatives and their implications for the long-term stability and productivity of the environment.

The owners of 49 Degrees North are committed to long-term management of the ski area. This use accommodates a high level of recreation visits on a relatively small portion of the Colville National Forest. Each Action Alternative continues this long-term commitment of the local environment to a relatively high-density recreation use. Continued development and expansion creates an opportunity for a greater number of people to use the area.

The Action Alternatives would require timber harvest to create ski runs. This would increase the short-term supply of lumber. Once expansion is completed, ski area management would not emphasize timber harvest, but future timber harvest would be possible. If desirable in the future, the land could return to long-term timber production if resort use is discontinued.

### **3.5.3 Irreversible and Irretrievable Commitments of Resources**

#### **3.5.3.1 Irreversible Commitments of Resources**

Irreversible commitments of resources refers to non-renewable resources, such as cultural resources, or to those factors which are renewable only over long time spans, such as soil productivity.

Soil loss and displacement, particularly related to road and building construction, would occur as a result of any of the Action Alternatives. Overall, there would be small soil loss due to erosion and an increase in sediment production with any of the Action Alternatives. The BMPs outlined in **Chapter 2 – Mitigation**, would be adequate to keep impacts within acceptable limits set forth in the Forest Plan and other jurisdictions.

Ski area development would represent a long-term commitment of the area to a relatively high intensity recreational use. However, should the time come when the ski area was no longer functioning, all facilities could be dismantled and removed and the area revegetated or allowed to return to a natural state. Roads and culverts can be removed and resources rehabilitated.

#### **3.5.3.2 Irretrievable Commitment of Resources**

Irretrievable commitment applies to losses of production, harvest, or use of renewable natural resources. Vegetation loss in mature and overstory timber would result from ski run clearing. The visual resource at the ski area itself would be irretrievably altered by the addition of lifts, ski runs, and base facilities. The conversion of forested lands to ski runs reduces the potential timber yields from the forest by a fraction of a percent. Soil productivity would be lost on areas covered by buildings, parking areas or other features and would be reduced on graded areas.

### **3.5.4 Specifically Required Disclosures**

#### **3.5.4.1 Effects on Threatened and Endangered Species, and Critical Habitat**

The Action Alternatives are not likely to adversely affect threatened or endangered species or critical habitat. The Action Alternatives may impact individual sensitive species and habitat, but would not likely contribute to a trend towards federal listing or cause loss of viability to the population or species.

#### **3.5.4.2 Effects on Wetlands and Floodplains**

The Action Alternatives would have a small effect on wetlands and floodplains at culvert installations for stream crossings. The wetland portion of these crossings is a very narrow zone along the waters edge (approximately 2 feet wide) and the total impact for all crossings would total approximately 0.2 acre. Floodplain conditions would be improved at culvert locations on Little Calispell Creek where existing culverts would be replaced by larger culverts sized to pass a 100-year flood event.

#### **3.5.4.3 Effects on Prime Farm Land, Range Land, Forest Land**

All alternatives are in keeping with the intent of the Secretary of Agriculture Memorandum 1827 for prime land. The proposed expansion area does not contain any prime farm lands or rangelands. "Prime" forest land does not apply to lands within the National Forest System. Under the Action Alternatives, National Forest System lands would be managed with sensitivity to the effects on adjacent lands.

#### **3.5.4.4 Energy Requirements of Alternatives**

There are no unusual energy requirements for implementing the Action Alternatives. Electricity for the ski lifts would be supplied by the existing power line system.

#### **3.5.4.5 Compliance with Section 504 of the Vocational Rehabilitation Act and the Americans with Disabilities Act (ADA)**

The permittee would be required to comply with all applicable provisions of Section 504 and the ADA. Compliance would be monitored through review of all construction plans and annual operating plans.

#### **3.5.4.6 Effects on Social Groups (Environmental Justice Executive Order 12898, Feb. 11, 1994); Effects on Civil Rights and Equal Opportunity**

The Action Alternatives are not expected to affect civil rights to any degree, nor would the design, construction, or operation of the resort involve discrimination against any minority group or women. Proposed lifts and buildings would improve access for persons with disabilities.